CALIFORNIA FISH AND GAME

"CONSERVATION OF WILD LIFE THROUGH EDUCATION"

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CALIFORNIA'S GAME REFUGES.

By HAROLD C. BRYANT.

Each state, as it has seen its game decrease in spite of protective legislation, has sought for some additional means of conservation which would improve conditions. A fundamental law of business is to the effect that although we spend, we must not waste our capital. This is as true of wild life as it is of money. Present conditions show that we have lavishly spent not only the income, represented in annual increase of our game, but have also drawn largely upon our capital, represented in breeding stock. To invest our remaining capital in such a manner as to provide a sure income, has become the most important problem in wild life conservation. Although we may have heard this simile until it seems almost trite, yet it accurately describes present conditions.

In recent years it has become apparent that the very best means of safeguarding our capital of breeding stock is not to be found in season and bag limit laws, but in the establishment of game sanctuaries where wild life is allowed to breed unmolested, and where in time it increases, spreading out to neighboring territory and furnishing food and sport for all those who care to seek it.

Two outstanding factors involving the decrease of game have combined to make the establishment of refuges urgent. In the first place, settle-

ment has reclaimed many of the natural breeding grounds of game with a consequent destruction of food supply. Secondly, in many places in California the country is becoming thickly populated, with a consequent concentration of hunting in nearby localities. The use of the mountains by city people is being continually encouraged and is growing. These factors make it increasingly difficult for game to maintain itself.

The game refuge furnishes an area where game may find natural and safe breeding and feeding grounds in order to insure a sufficient number being left to prevent extermination and, if possible, to keep neighboring territory sufficiently stocked to allow of good hunting.

With the rapid settlement of the country it will soon be impossible to find areas where natural conditions exist. Sportsmen of the future will be forced to do their hunting on artificially planted private grounds, or kill game reared on game farms, unless certain areas are maintained in their natural state. Herein we find an important reason for the establishment of national parks and state game refuges. Not only will the sportsmen benefit thereby, but also the scientists interested in natural history, for the parks and refuges will soon be the only areas unspoiled for scientific study.

That California has done something more than talk about the value of game refuges, is evidenced by the fact that twenty-eight refuges, comprising over two million acres of land, have been set aside by the state. The total area on which animal life is given absolute protection comprises nearly three million acres, for the state is fortunate in having within its borders three federal bird reservations, three national parks and three national monuments, in all of which wild life receives complete protection.

HISTORY.

Even before there were bag limits or seasons on game, the state legislature was convinced of the necessity of giving waterfowl careful protection on a lake in the city of Oakland. In 1869 an act restricting fishing and hunting in and about Lake Merritt, Alameda County, became a law. The thousands of ducks which gather on this lake every winter attest the efficacy of the refuge. Eleven species of ducks regularly resort to the lake in winter, with the pintail, baldpate, canvasback, and ruddy predominating. In fact, the waterfowl have become such a great attraction to both citizens and tourists that the city finds it worth while to furnish grain to feed the birds.

State game preserves.

Sentiment favoring this means of conservation became crystalized in 1907, when an act providing for the establishment of state game preserves became law. The law provides that

> "Any person, firm or corporation, owning and in possession of patented lands in the State of California, embracing an area of not less than one hundred and sixty acres, may transfer, by an instrument in writing, duly acknowledged before an officer authorized under the laws of this state to take acknowledgments, to the State of California, the right to preserve and protect all wild game on the land described therein for a period of not less than five years."

In 1913 a change was made in this law, which made it more effective, the time limit being extended to cover a period of ten years instead of five.

Advantage has been taken of this law in only a few instances. At present there are but three state game preserves. One is situated on the land of Mr. Bryan in Monterey and San Benito counties, and the other two are located near each other in Santa Barbara County. Too often applicants attempting to make use of the law show a desire to preserve areas for selfish gain, and not for the benefit of the game itself.

Big game refuges.

Unfortunately no additional refuges were created until 1909, when the Pinnacles National Monument, situated in San Benito and Monterey counties, was made a game refuge.

FIG. 1. A few of the wild ducks on Lake Merritt, a game refuge created in 1869. The city of Oakland feeds these winter visitors to add attractiveness to the city park. Photograph by H. C. Bryant, January 6, 1919.

A large area within the Cleveland National Forest in southern California was made a refuge in 1913. In 1915 there was added an area in the California Redwood Park, in Santa Cruz County, commonly known as the Big Basin, a portion of the Trinity National Forest, in Trinity County, and a large part of the Angeles National Forest, in Los Angeles and San Bernardino counties, the Trinity refuge comprising 64,000 acres and the Angeles 600,740 acres. Both refuges have been increased in size since their creation. In the same year the areas covered by the Trinity and Los Angeles forests were included in the Districting Act, so that legally these refuges are known as fish and game districts. A special law prohibits hunting within the fish and game districts specified as game refuges.

In 1917 the legislature set aside sixteen large areas within the national forests as game refuges. These refuges, scattered from Siskiyou to San Diego County, are as follows:

1A—Siskiyou
2A—Mendocino and Lake
1B—Modoc
1C—Modoc
3C—Santa Barbara
3D—Ventura
4D—Riverside
1E—Shasta
4E—San Diego
1F—Lassen
1G—Tehama
1H—Plumas
1I—El Dorado
1J—Amador
1K—Fresno
1L—Tulare and Kern
Mount Tamalpais—Marin

The selection of the refuges was made possible through the cooperation of the United States Forest Service.

The situations were chosen with reference to the kinds of game to be found; whether both summer and winter range was furnished; the food supply, and the ease of administration. Particular attention was given the boundaries, the attempt being made to use natural boundaries such as ridges and creeks rather than artificial section and township lines recognized with difficulty by the hunter. The legislators were unanimous in carrying out the recommendations.

Three additional areas were created by the 1919 legislature, and one by the 1921 legislature.

Up to the present time, therefore, the state has set aside twenty-eight game refuges and three game preserves, comprising nearly two million acres. These are so situated that they form a chain of refuges, properly spaced, extending from the Oregon line to the Mexican border.

It has been surprising to see how quickly sentiment has come to favor the refuges established. One would have thought that a great deal of complaint would have emanated from hunters when such large areas were selected in some of the best hunting grounds of the state in 1917. The fact is that many who did not favor the refuges when first created now are enthusiastic supporters of the policy. The value of the refuge has been demonstrated to the most sceptical.

FEDERAL BIRD RESERVATIONS.

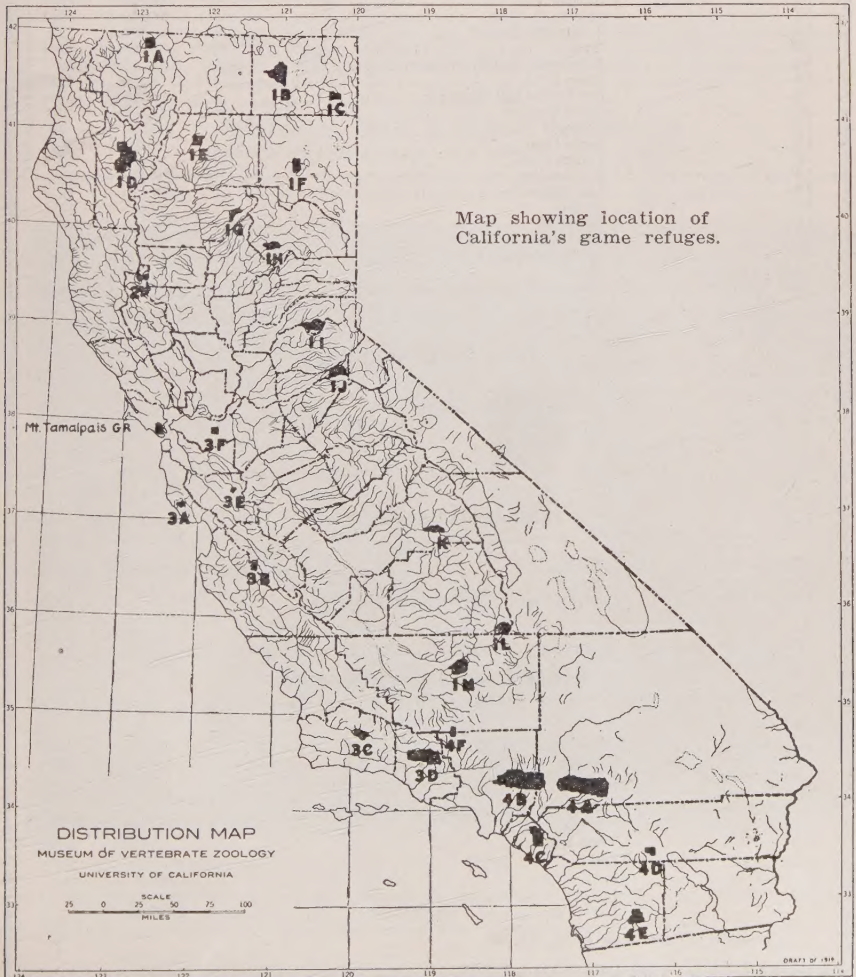
Beginning with the presidency of Theodore Roosevelt, considerable interest was taken in the setting aside of notable breeding areas of waterfowl. The Klamath Lake Reservation was created in 1908; East Park and the Farallon Island Reservation in 1911, and the Goat Island Reservation in 1916.

Unfortunately, conditions in the best of these reservations, the Klamath Lake Reservation, are far from satisfactory. As a result of continued endeavor on the part of land promoters, Lower Klamath Lake is being drained, leaving large areas of alkali and mud flats which neither benefit the settlers adjoining the lake nor furnish additional land suitable for agriculture. Drainage has allowed the starting of large tule fires which, in addition to the lack of water, has rendered large areas unfit for occupation by birds. Unless a change in policy is made in the near future, this valuable reservation for wildfowl is seriously jeopardized. The Farallon Island Reservation forms a splendid sanctuary for murres and other sea birds.

The East Park Reservation proved to be of little consequence in that there was not a suitable food supply attractive to wild fowl on the East Park Reservoir. Investigation having shown that this reservation, and also the San Francisco Bay Reservation on Goat Island, which was mainly useful for the preservation of pheasants planted on the island, were comparatively little visited by wild fowl, an elimination of these reservations was recommended and the President eliminated them by an executive order dated May 20, 1921.

NATIONAL PARKS AND MONUMENTS.

California is fortunate in having within its borders three national parks and three national monuments, which add nearly a million acres to the state's reservations. As all wild life within these areas is absolutely protected, the national parks and monuments constitute some of our best refuges. The large size of the parks in particular, and their advantageous situation, make them especially adapted for the conservation of big game. A visit to any of these parks will demonstrate the usefulness of the policy of protecting all wild life found within their borders.



Map showing location of California's game refuges.

CALIFORNIA'S GAME SANCTUARIES.

CALIFORNIA IS ASSURING A PERPETUAL SUPPLY OF GAME BY SETTING ASIDE AREAS WHERE NO HUNTING IS ALLOWED AND WHERE GAME IS ALLOWED TO BREED UNMOLESTED. THE STATE IS RESPONSIBLE FOR THE CREATION OF MOST OF THEM, THE FEDERAL GOVERNMENT FOR OTHERS. CERTAIN AREAS KNOWN AS GAME REFUGES HAVE BEEN SET ASIDE BY LEGISLATIVE ENACTMENT. OTHERS KNOWN AS STATE GAME PRESERVES HAVE BEEN CREATED BY THE FISH AND GAME COMMISSION AFTER THE OWNER OF THE PROPERTY HAS CEDED ALL HUNTING PRIVILEGES TO THE STATE FOR A PERIOD OF NOT LESS THAN TEN YEARS. THE FEDERAL GOVERNMENT HAS SET ASIDE THREE BIRD RESERVATIONS AND PROTECTS ALL OF THE WILD LIFE WITHIN THE NATIONAL PARKS AND NATIONAL MONUMENTS. AS A CONSEQUENCE GAME IS NOW ABSOLUTELY PROTECTED ON NEARLY 3,000,000 ACRES WITHIN THE STATE OF CALIFORNIA, AN AREA ROUGHLY EQUIVALENT TO THREE PER CENT OF THE TOTAL AREA OF THE STATE.

GAME REFUGES.

Name	County	Area, acres	Established
1A	Siskiyou	22,540	1917
1B	Modoc	83,060	1917
1C	Modoc	21,760	1917
1D	Trinity	82,560	1915
1E	Shasta	37,760	1917
1F	Lassen	46,720	1917
1G	Tehama	33,920	1917
1H	Plumas	37,760	1917
1I	El Dorado, Calaveras	67,840	1917
1J	Amador	58,320	1917
1K	Fresno	34,240	1917
1L	Tulare and Kern	35,520	1917
1M	Kern	81,920	1919
2A	Mendocino, Lake and Butte	35,200	1917
3A	Santa Cruz	4,480	1915
3B	San Benito and Monterey	14,080	1909
3C	Santa Barbara	41,600	1917
3D	Ventura	125,760	1917
3E	Santa Clara	3,600	1919
3F	Contra Costa	10,240	1921
4A	Los Angeles	293,120	1915
4B	Los Angeles	325,120	1915
4C	Orange	99,840	1913
4D	Riverside	69,120	1917
4E	San Diego	51,840	1917
4F	Los Angeles and Kern	46,080	1919
Mount Tamalpais	Marin	28,000	1917
Lake Merritt	Alameda County (Oakland)		1869
		1,792,000	

STATE GAME PRESERVES.

No. 5	Monterey and San Benito	8,570	1916
No. 6	Santa Barbara	42,000	1918
No. 7	Santa Barbara		
		50,570	

FEDERAL BIRD RESERVATIONS.

Klamath Lake	Siskiyou	*22,400	1908
Clear Lake	Modoc	*1,600	1911
Farallon Islands	Pacific Ocean, near San Francisco		1909
		24,000	

*Approximate.

NATIONAL PARKS AND MONUMENTS.

Parks—			
Yosemite	Tuolumne and Mariposa	719,622	1890
Sequoia	Tulare	161,597	1890
General Grant	Fresno and Tulare	2,536	1890
Monuments—			
Lassen Volcanic	Shasta, Lassen, Plumas and Tehama	79,561	1916
Muir Woods	Marin	295	1908
*Pinnacles	San Benito	2,080	1908
		967,691	
		2,834,261	

*Included in State Game Refuge No. 3B.

←——BOUNDARY——→
STATE GAME REFUGE
Hunting Prohibited

FIG. 2. Type of notice, printed on tin, used to mark the boundaries of game refuges.

ADMINISTRATION.

Care is being taken to administer the game refuges in such a way as to make them most useful. Boundary notices often have been posted as well as cloth signs, warning the public that they are within a refuge.

WARNING

THIS IS FISH AND GAME DISTRICT ONE D, A GAME REFUGE
Created by Act of Legislature in 1915

It is unlawful to hunt, pursue, take, catch, kill, destroy or have in possession any wild animal or wild bird, except waterfowl, within the boundaries of this REFUGE.

PENALTY for violation: A FINE of not less than $100, or IMPRISONMENT of not less than 50 DAYS.

NOTE.—Predatory birds and animals may be killed and had in possession within this REFUGE under authority of permit issued by the Fish and Game Commission. Apply in writing for permit to nearest office of Commission.

This warning notice posted at direction of
California Fish & Game Commission
Offices: San Francisco, Sacramento, Los Angeles

FIG. 3. Type of warning notice used within a game refuge.

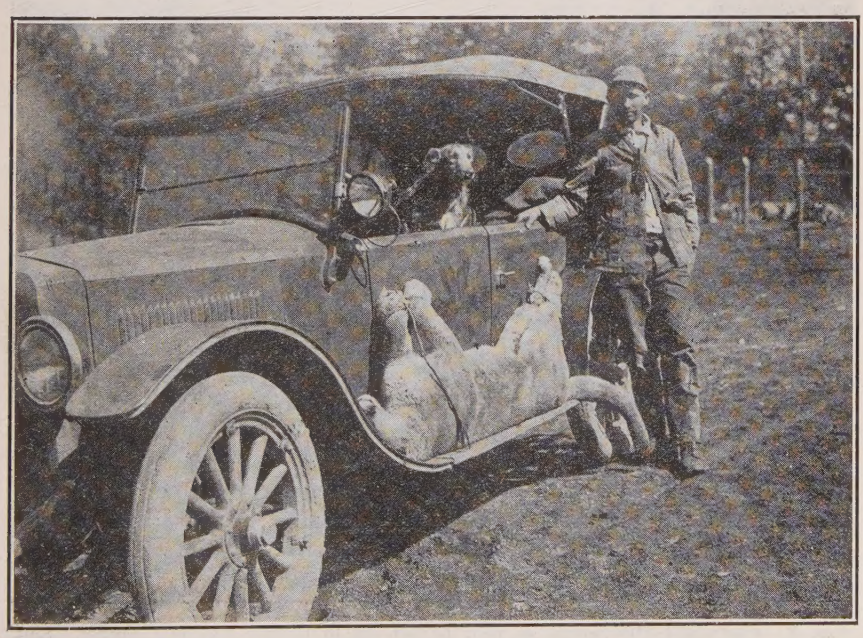


FIG. 4. Jay Bruce, state mountain lion hunter, with lion killed on the North Fork of the Stanislaus River, on March 27, 1921. His famous lion dog, Eli, occupies the front seat. A large proportion of the lions killed each year by Mr. Bruce are taken within game refuges. Photograph by W. J. Rodgers.

In several cases wardens have been located near refuges in order that they might be well patrolled and in other instances part-time men have been stationed within refuges during the open season to prevent poaching. Augmented patrol in the refuges is planned.

The control of predatory animals within a refuge is largely accomplished by issuing special permits to hunters and trappers making application. In addition, a state mountain lion hunter is retained whose duty it is to go from one refuge to another with his well trained dogs and reduce the numbers of wildcats and mountain lions. (See Fig. 4.) In 1920 Mr. Bruce secured thirty lions, a large percentage of which were killed within the boundaries of refuges. Five refuges and two national parks have thus far received a visit from Mr. Bruce and his lion dogs.

The greatest need now is the careful patrol of the present refuges and an effort to gain maximum efficiency; also the setting aside of refuges for the small herds of elk and antelope still found in the state. The herd of elk in Kern County will continue to be a problem because of their depredations until given a fenced refuge. The area to the south of Lower Klamath Lake, where the largest band of prong-horned antelope is found, should constitute a game refuge.

Another important consideration is whether or not increased opportunity should be afforded the recreationist within game refuges. At first thought it would appear that the game would benefit most by the lack of intrusion on the part of the vacationist, but there is another side. The efficiency of the game refuge is largely dependent upon the

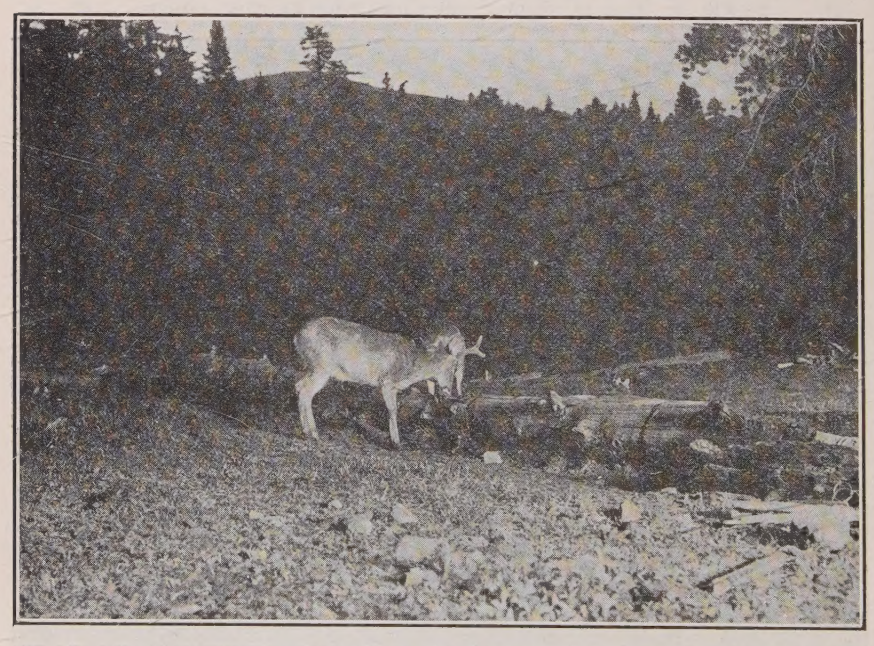


FIG. 5. Flashlight photograph of deer at salt log in Lassen National Forest. Salt for deer is provided in some of the game refuges. Photograph by courtesy of Forest Service.

public sentment of neighboring communities, and this is dependent in turn upon the knowledge and interest of the individuals. Public interest is a necessity and for this reason the legitimate use of the refuge for recreation purposes will in the end benefit game conservation.

MAPS.

In order to acquaint the public with the state's refuges, their extent and boundaries, short descriptions accompanied by a series of maps prepared by Mr. J. S. Hunter, and which are published for the first time, follow. By use of these maps hunters will be able to plan their hunting trips so as to avoid trespassing within a refuge, and conservationists will be able to visualize the extent and topography of the various restricted areas.

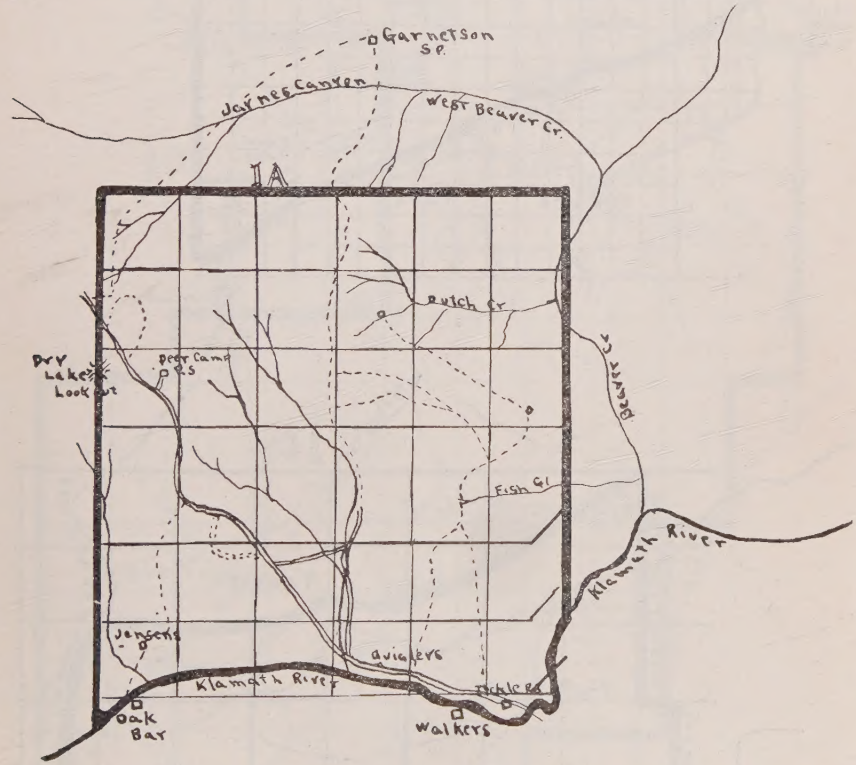


FIG. 6. Game Refuge 1A, situated in Siskiyou County, contains a large number of deer, furnishing summer range in the high mountains, and winter range in the low foothill section near the Klamath River. Nearly every type of forest and brush is represented. A fair salt lick is located near the center of the area. In addition to deer, there is an abundance of grouse, and both valley and mountain quail. Doves breed to a certain extent in the lower portion of the refuge. Located in the very heart of the county that is heavily hunted in the hunting season, the refuge furnishes a much needed protection for a large number of deer.

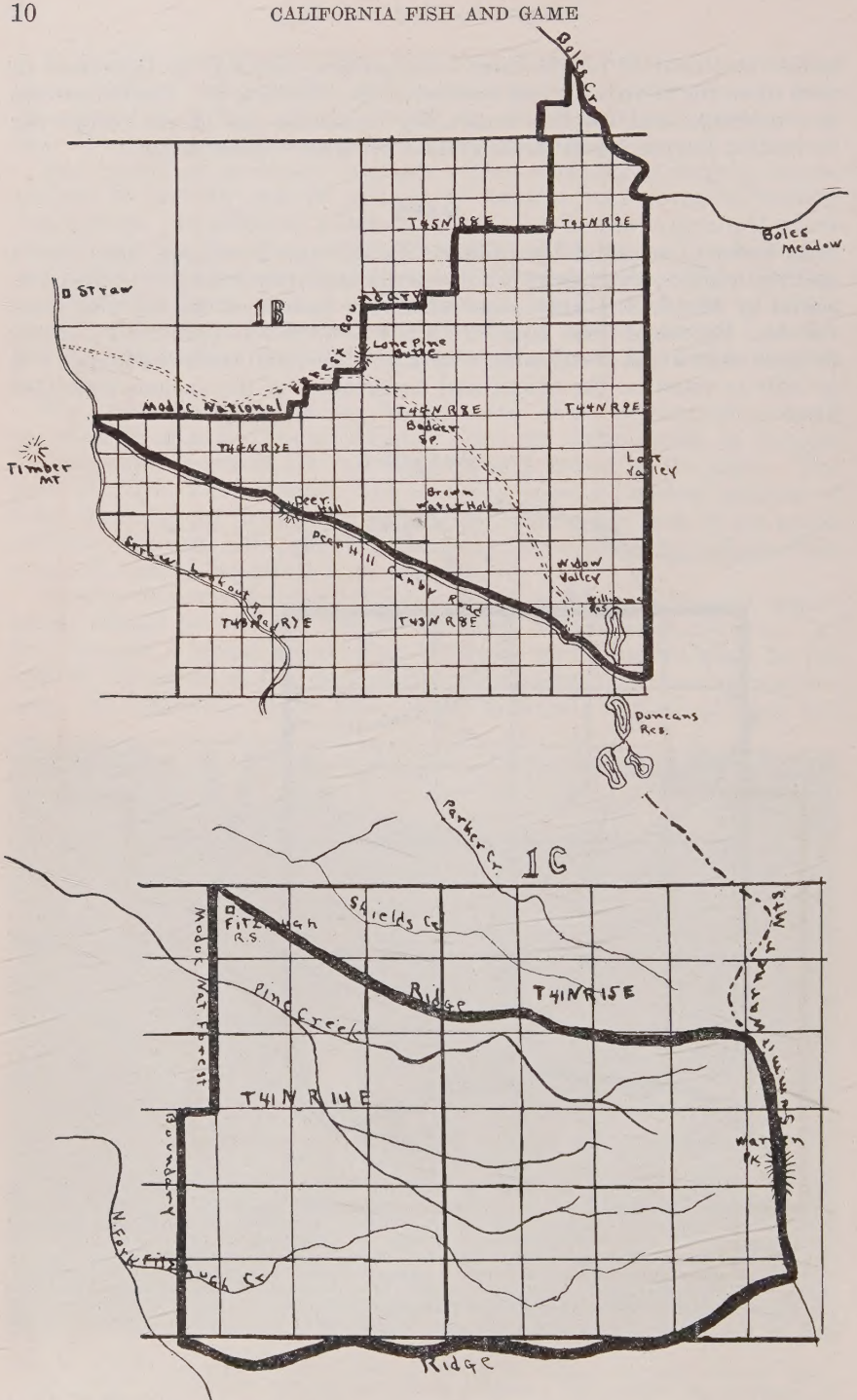


FIG. 7. Refuge No. 1B and 1C were set aside primarily to protect the mule deer. The cover is mostly a pure stand of yellow pine with some open flats of juniper and the low regions are covered with brush. Mowitz Butte, situated in 1B, is much frequented by mule deer, affording both a breeding place and wintering area. District 1C, comprising the headwaters of Pine Creek, in addition to furnishing protection to the mule deer, affords protection to grouse and quail. No better location in the Warner Mountains could have been selected than this area.

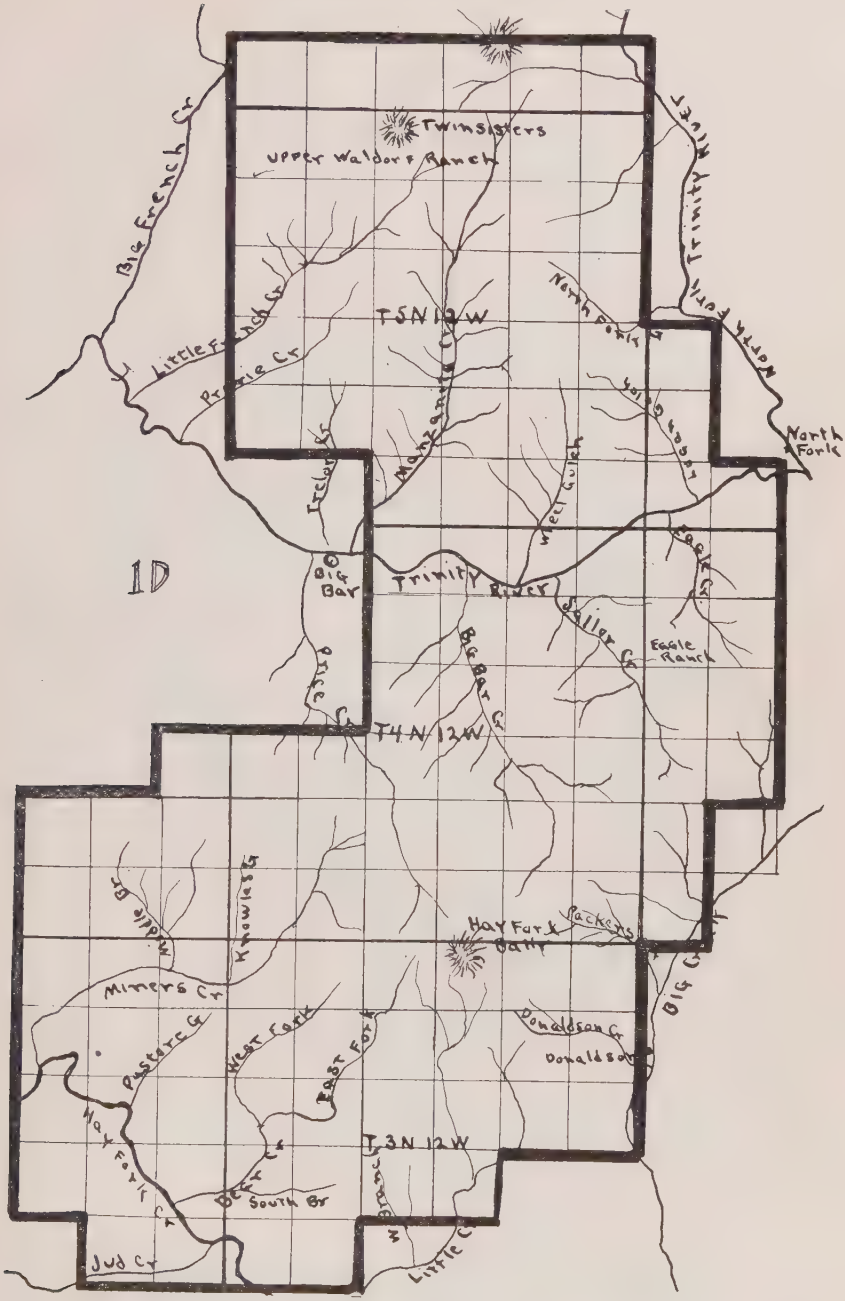


FIG. 8. Fish and Game District 1D, in Trinity County, has proved to be one of the best of the big game refuges. Perhaps its efficiency is simply more apparent because of the length of time since its establishment in 1915. Every resident of the region maintains that deer have greatly increased within the refuge. Certainly ideal conditions exist, there being wide range in elevation and many south exposures, furnishing abundant winter and summer range, so that game need not leave the refuge at any time. There are few places in the state where so many deer can be seen at close range. One adverse factor is becoming more and more important. Considerable grazing is allowed within the refuge and much food that would otherwise be available for deer is eaten by cattle, thus minimizing the population of deer which the area should support. Local sentiment in regard to this refuge has grown remarkably since 1915, changing from general disapproval of the restriction to a most favorable and enthusiastic attitude of cooperation.

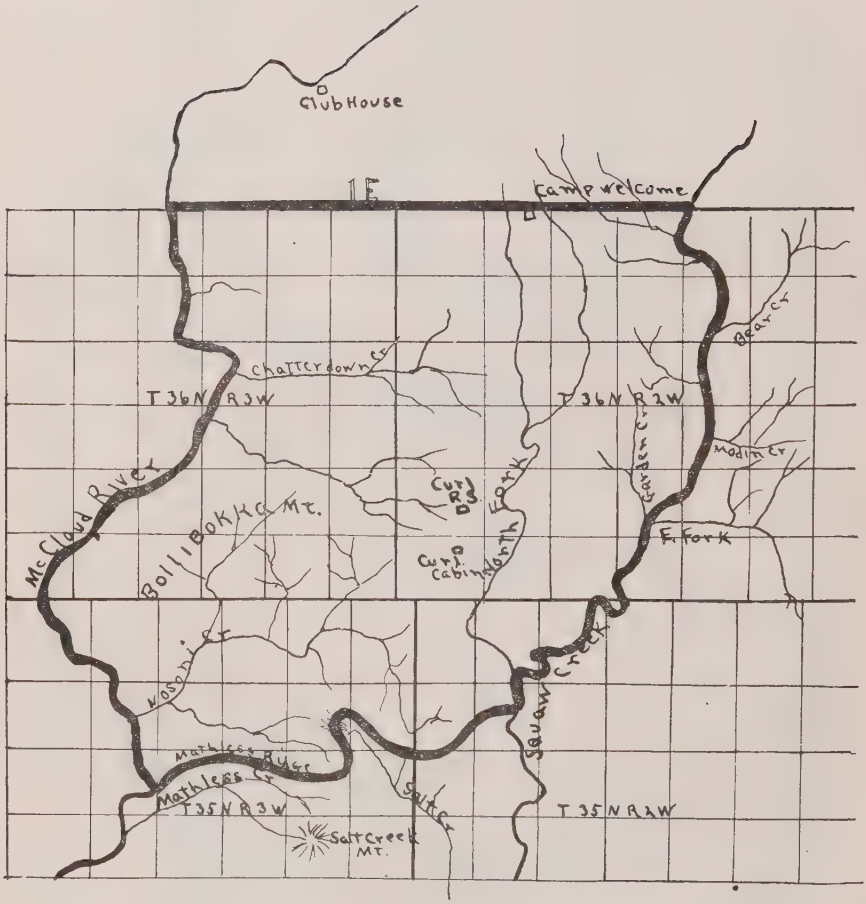


FIG. 9. Fish and Game District 1E, situated between Squaw Creek and the McCloud River in Shasta County, lies in the heart of some of the best hunting grounds in northern California. Year-round range is furnished big game, and both quail and grouse are abundant. A few bear are also found. Several natural salt licks make the area attractive to deer.

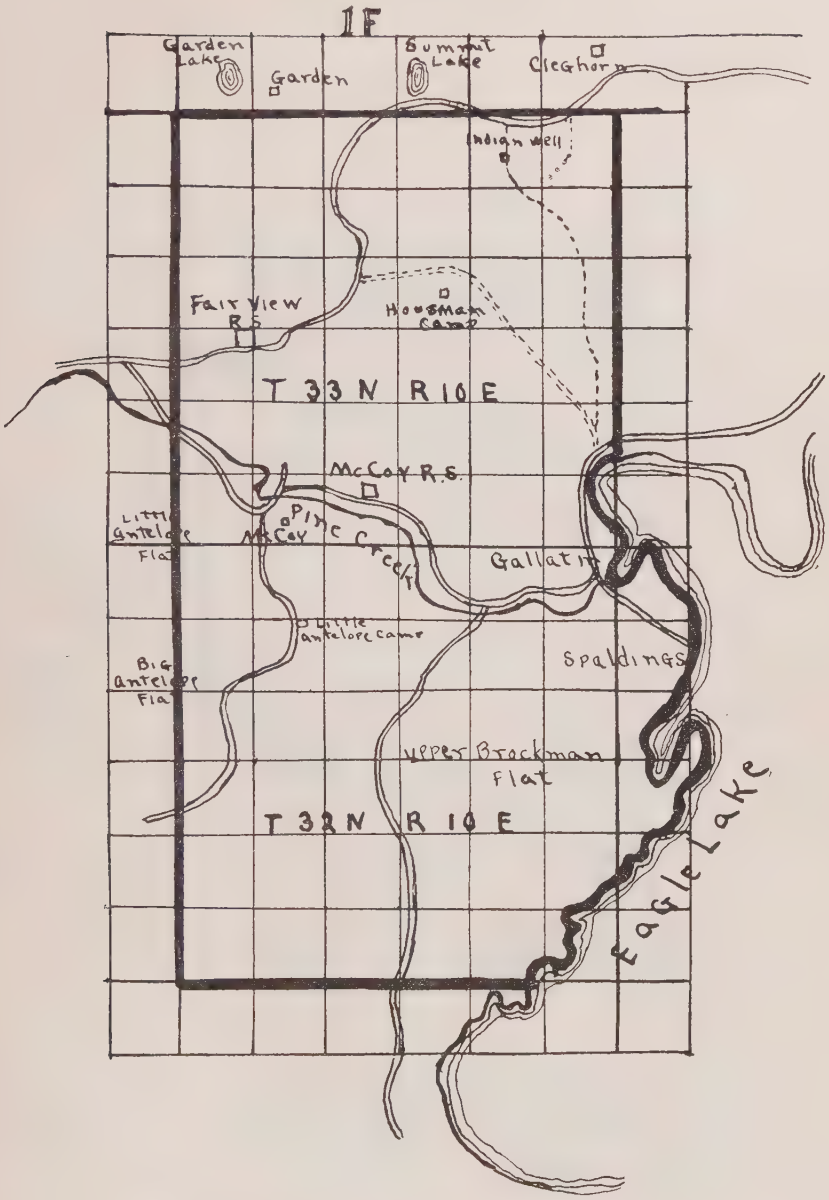


FIG. 10. Fish and Game District 1F, situated in Lassen County, embraces an area ranging from 4800 feet along the eastern edge to 6500 feet on the higher points. There are numerous meadows and also extensive areas covered with brush and with forest. When the refuge was formed it was estimated that 600 mule deer winter within the area. The outstanding feature of this refuge is that a few antelope remain within its borders. Although wholly protected by law, any advantage that can be given to this species should be provided, for few individuals are left of the numerous herds once found within the state. The fact that a few of these animals are within a game refuge should help prevent poaching which goes on in outlying districts. In that this refuge lies for the most part at such high altitude, it does not offer so much good winter range as do many other refuges.

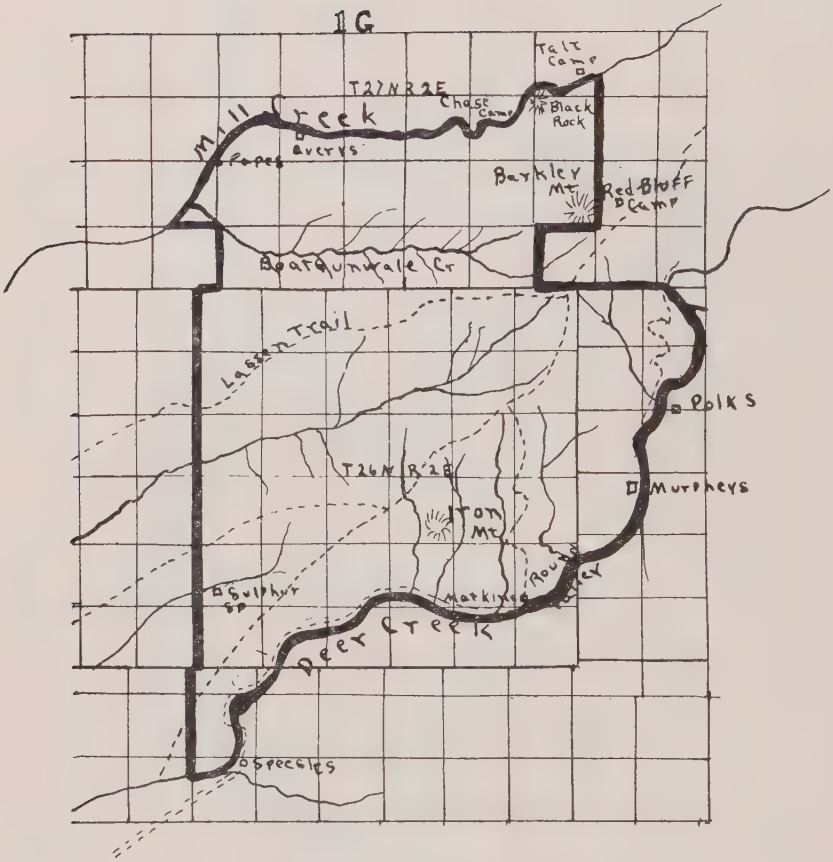


FIG. 11. Fish and Game District 1G, embracing a rough area between Mill Creek and Deer Creek in Tehama County, furnishes both summer and winter range for black tail deer, bears, and such upland game birds as grouse, mountain quail and valley quail. Deer concentrate in the western portion of the area in winter and spread out over the eastern part in summer. The forests covering the larger part of the refuge are white oak, digger pine, and brush on the winter ranges, and yellow pine, sugar pine, fir and cedar on the summer ranges. The winter range has excellent forage and is rarely completely snowed in.

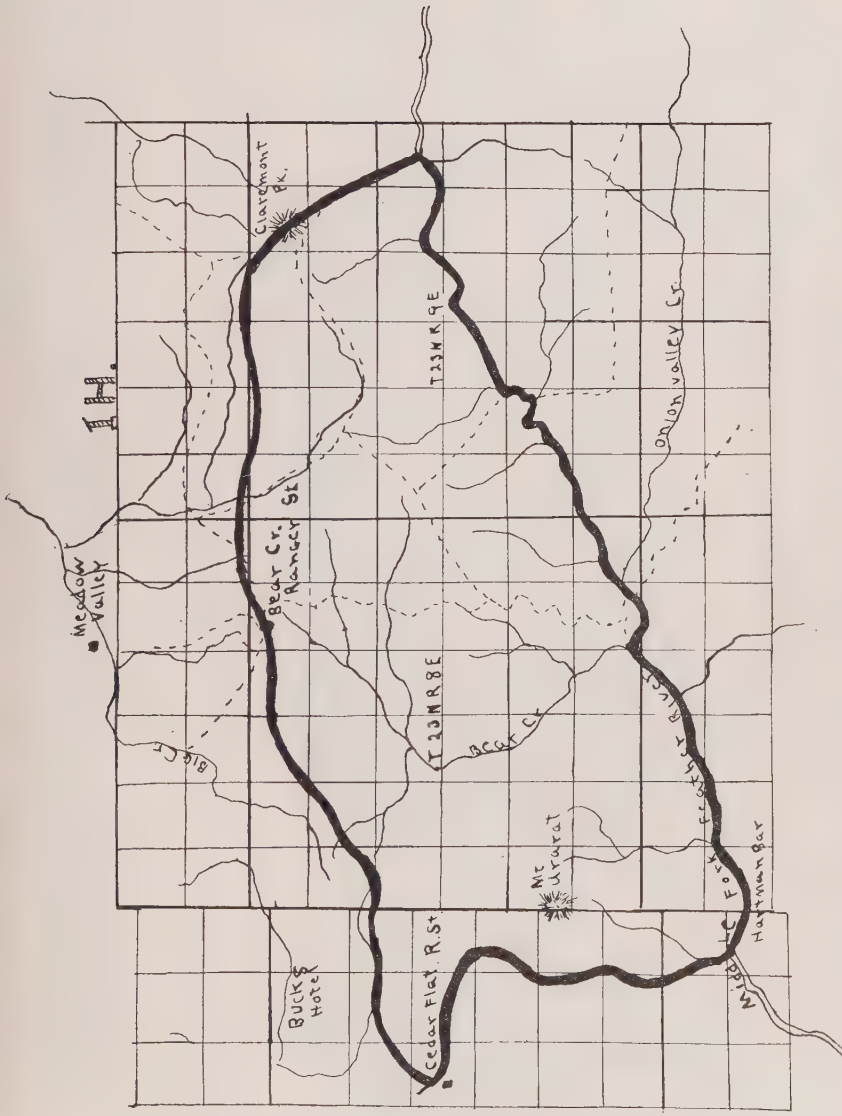


FIG. 12. Fish and Game District IH comprises an area on Mill Creek in Plumas County, ranging in altitude from 1600 feet on the west, to 7831 feet on Butte Mountain to the east, and offering both winter and summer range for big game. The western portion of the area forms a great winter resort for deer, both grass and browse being abundant; the eastern part furnishes a splendid summer range and deer are found in large numbers, as are mountain quail, valley quail and grouse.

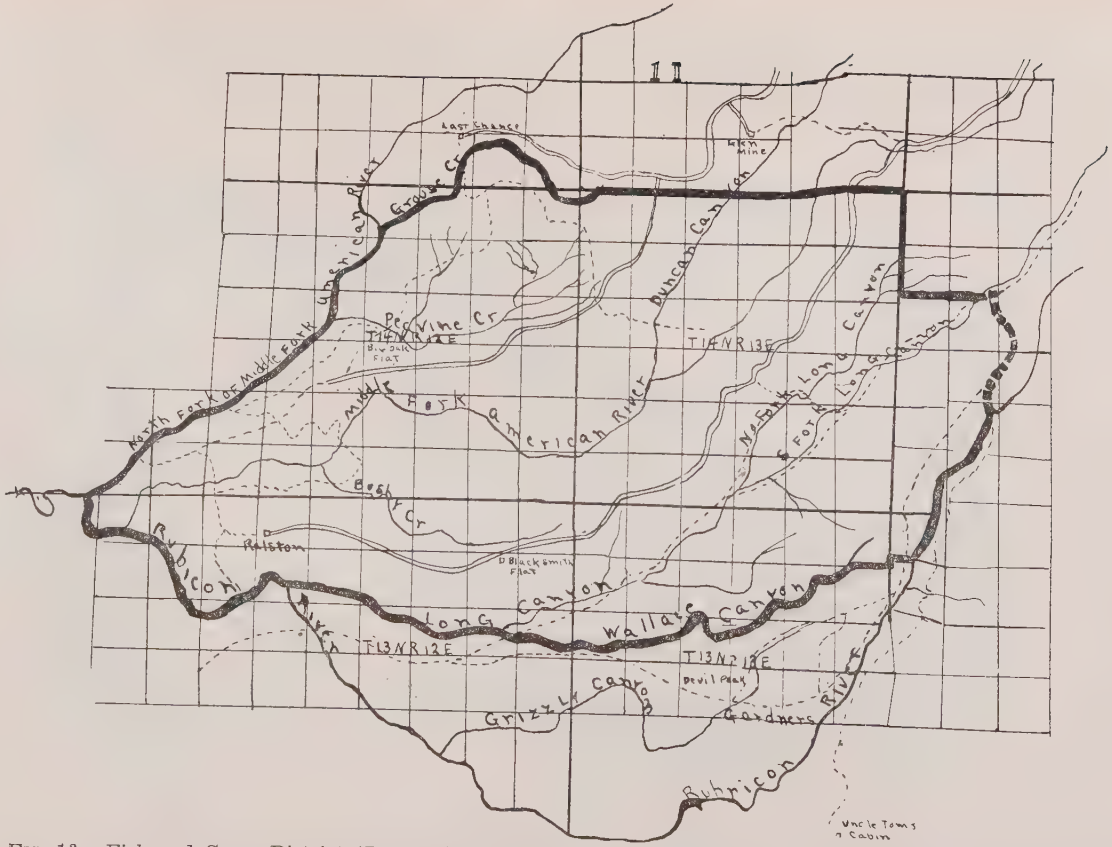


FIG. 13. Fish and Game District 1I comprises several long narrow ridges between the Middle Fork of the American River and its tributary, the Rubicon River. This refuge is well situated and has splendid natural boundaries. Brush covers the lower hills, and the flats above are covered with yellow pine. Excellent summer and winter range is furnished for deer; bear are also to be found. In fact, this refuge, situated in Placer County, is probably one of the best in the state, so far as deer are concerned.

FIG. 14. Fish and Game District 1J, in Amador County, is an excellent breeding ground for deer. Within this area also deer are afforded numerous protected grounds where they may congregate during heavy snowfall. Bear are to be found in the district, as well as much small game.

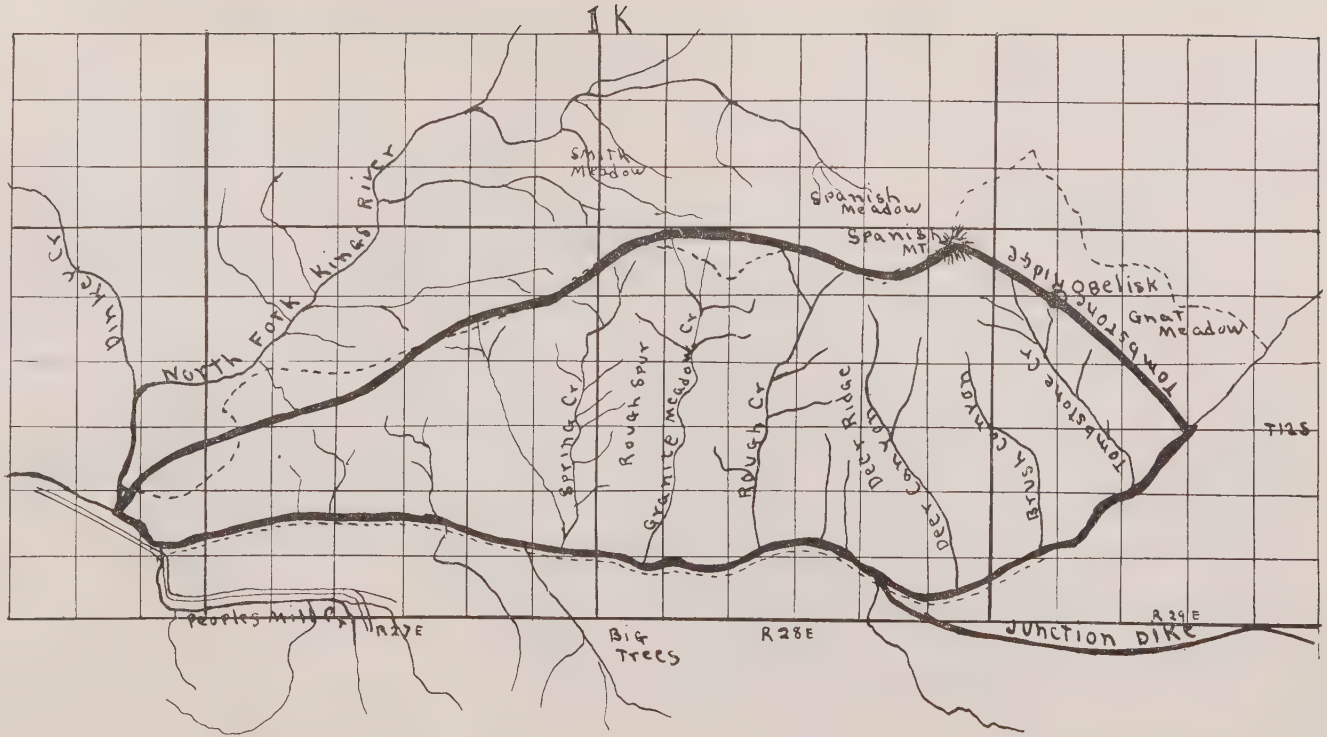


FIG. 15. Fish and Game District 1K comprises a number of ridges and canyons near the headwaters of the Kings River, in Fresno County. Forage for the large stock of big game is available both summer and winter, and the refuge should supply good hunting in surrounding territory for many years to come.

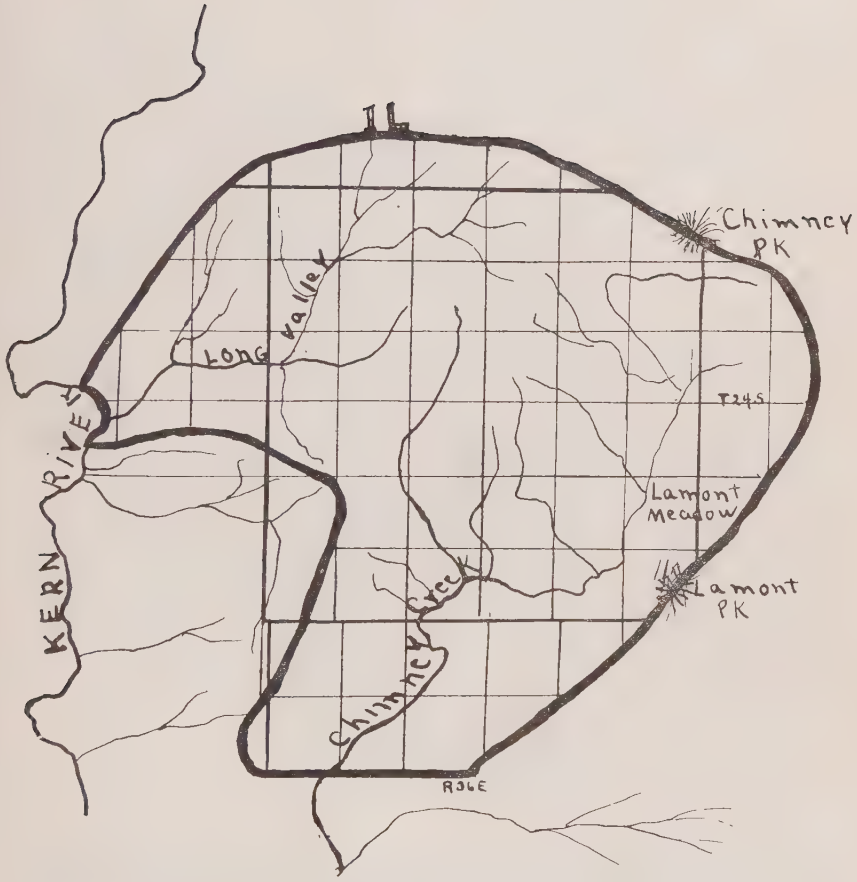
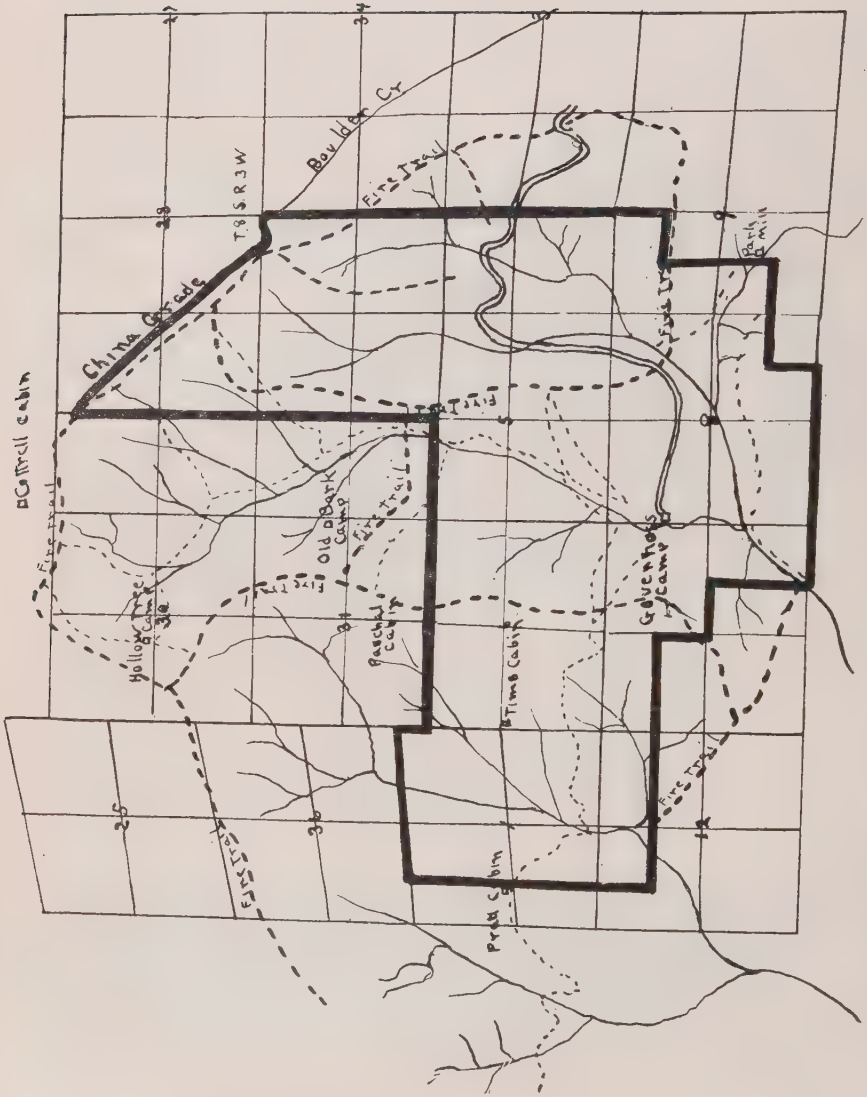


FIG. 16. Fish and Game District 1L comprises part of the drainage area of Chimney Creek, a tributary of the Kern River, in Tulare and Kern counties. Abundant food for big game is to be found. In that this district is located away from the main traveled roads, its usefulness as a refuge will increase as the country is opened up for hunters and recreationists.

FIG. 17. Fish and Game District 1M, an area surrounding Mount Breckenridge in Kern County, was recommended by an association of Kern County sportsmen and was set aside by the legislature of 1919. It furnishes a sanctuary for deer and also for small game. Concentrated hunting in the vicinity made the setting aside of this refuge urgent.

FIG. 18. Game Refuge 2A, situated in Mendocino and Lake counties, comprises a rough area on the watersheds of Anderson Creek, Rattlesnake Creek and Trout Creek, and part of the watersheds of Cold Creek, Corbin Creek and Sand Creek, tributaries of South Eel River. The elevations range from 2600 feet to 6875 feet on Hull Mountain on the west side of the area. The most important game in this refuge is deer, the area being well adapted as a breeding ground for this species. Black bear find protection, also. A few mountain quail and a few grouse are to be found on the higher parts of the area, and a few coveys of valley quail at the lower elevations.


China Grade
Boulder Cr.
T9S R3W
Fire Trail
Bonfire cabin
Hollow Tree Camp
Old Bark Camp
Bachal Cabin
Prim Cabin
Primo Cabin
Cavenhos Camp
Fire Trail
Fire Trail
Fire Trail

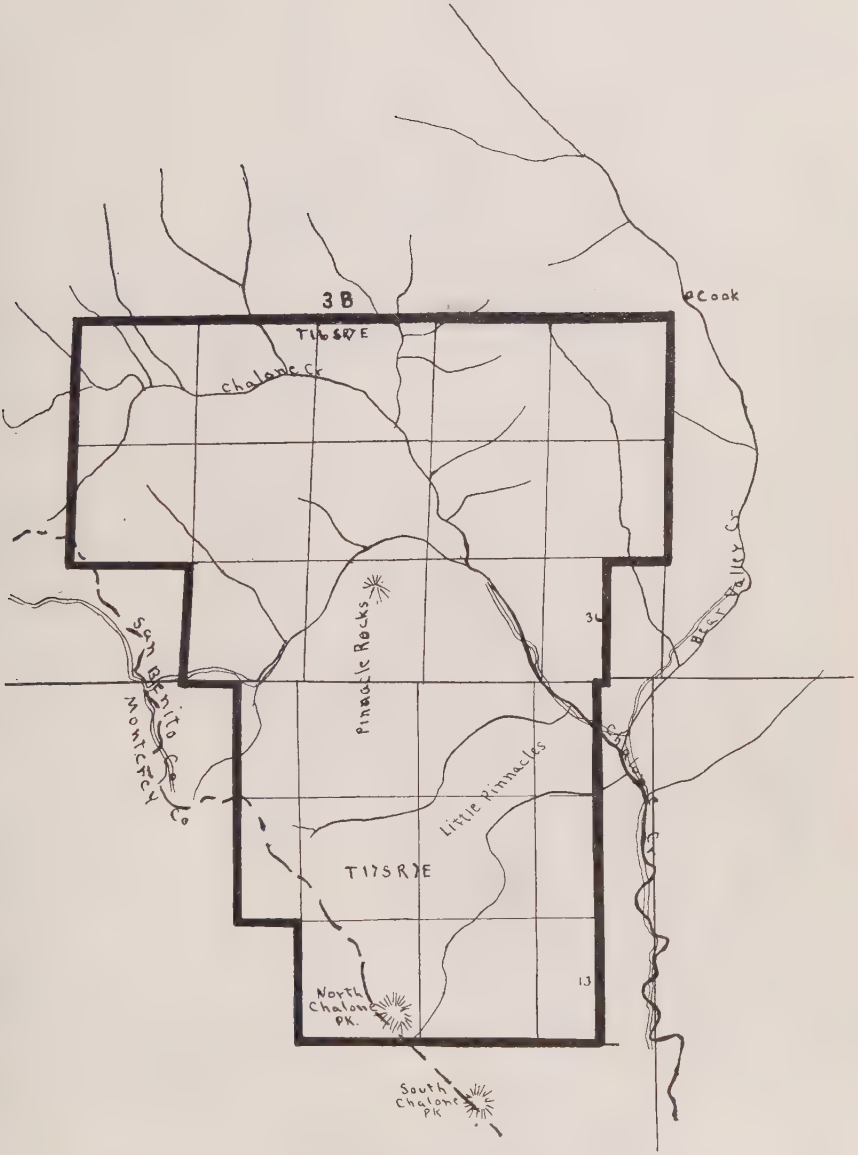


FIG. 20. Fish and Game District 3B, an area in San Benito and Monterey counties, includes within its boundaries the Pinnacles National Monument, set aside by the National Government to conserve an interesting geological formation. The refuge is much larger than the monument, and furnishes year-round range for deer. Many deer are to be found within its borders and quail are abundant.

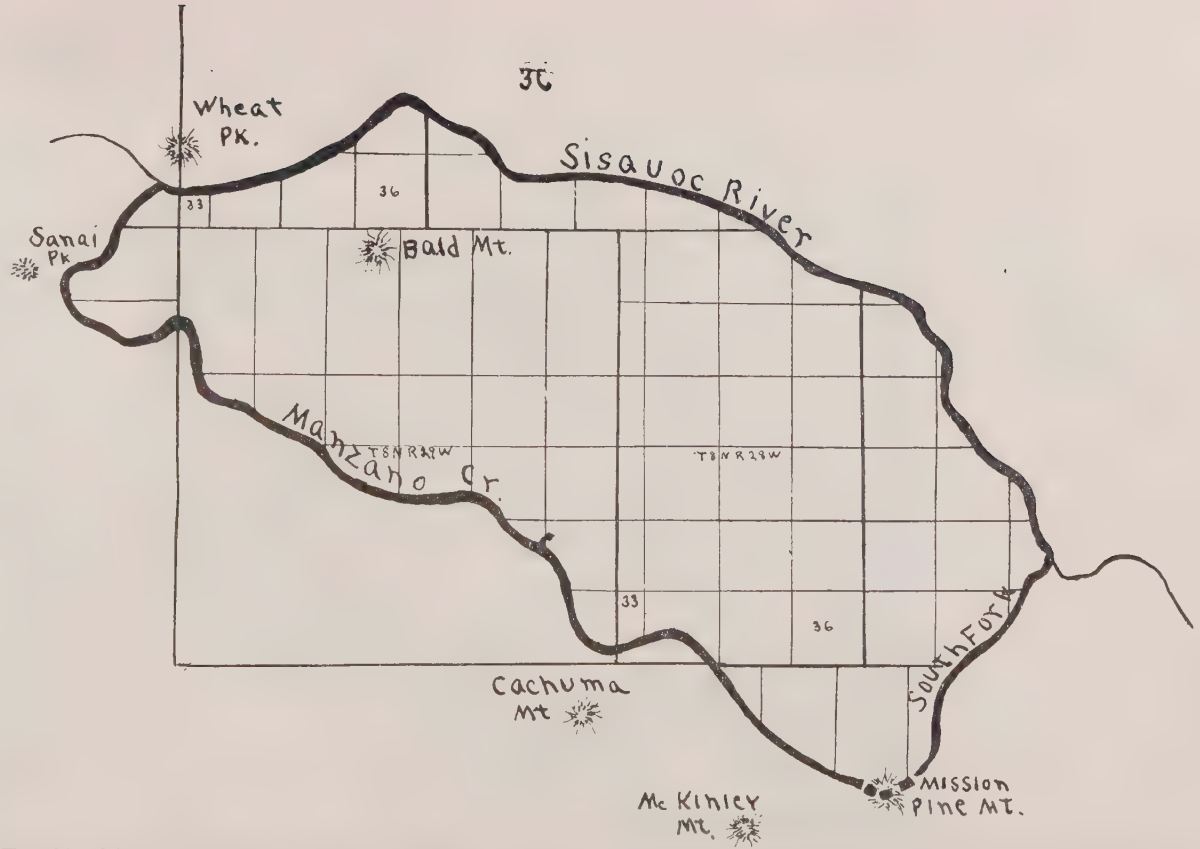


FIG. 21. Fish and Game District 3C is composed largely of a rugged ridge situated between the Sisquoc River and a large tributary known as Manzano Creek in Santa Barbara County. Numerous small canyons are tributary to these dividing streams and furnish shade and water. Numerous springs are also to be found. The cover is principally chapparal with patches of oak timber. Year-round range is furnished for deer, and quail and wild pigeons also find protection within the refuge.

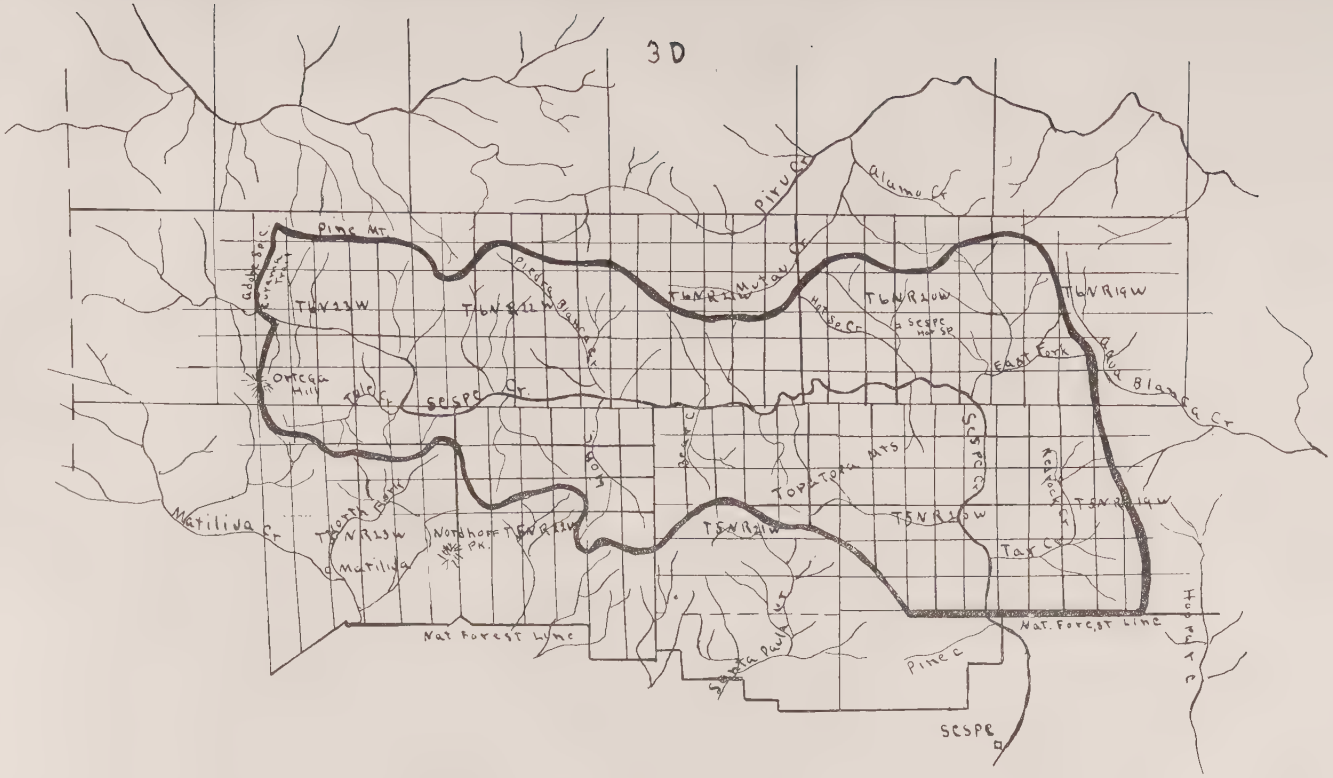


FIG. 22. Fish and Game District 3D lies in Ventura County, and comprises most of the watershed of the Sespe River where it runs in the mountains. The entire area is covered with brush, there being a small amount of pine and fir timber on the summit of Pine Mountain, and scattered forested areas in the canyons. Deer, bear, quail, and wild pigeons find protection on the area.

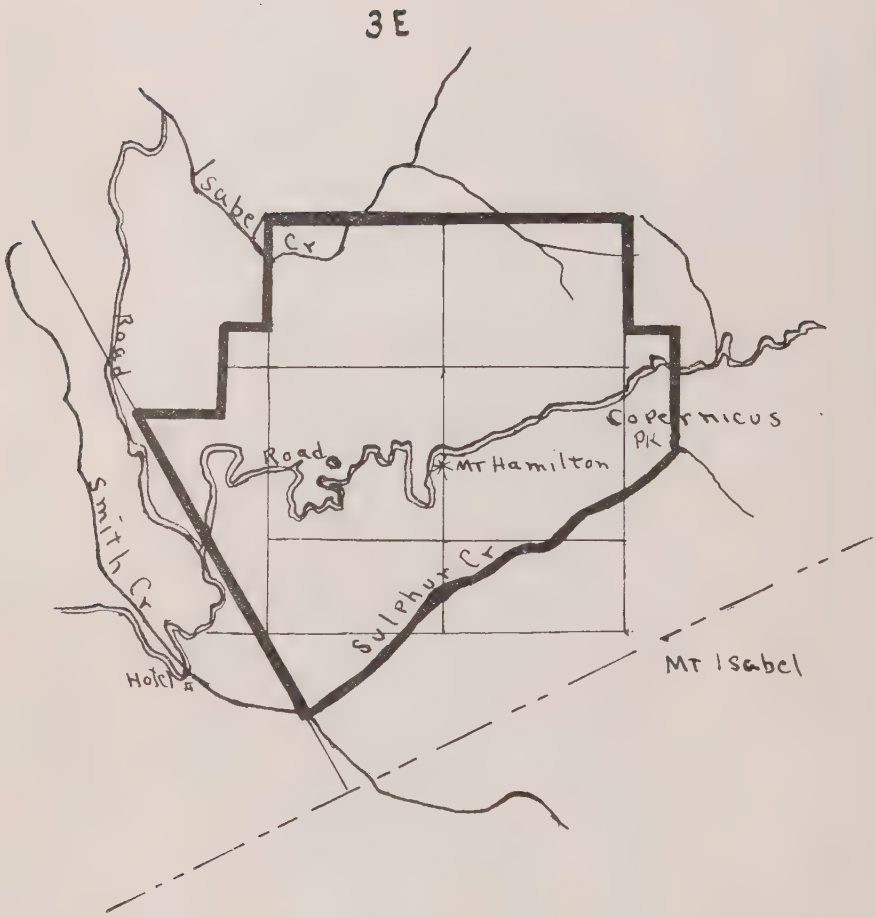


Fig. 23. Fish and Game District 3E comprises an area surrounding Mount Hamilton in Santa Clara County, being the land owned by the University of California, on which the Lick Observatory stands. This was formerly one of the favorite hunting grounds for sportsmen from San Jose, and should afford additional needed protection to the deer in that vicinity. Since the creation of this refuge, deer have increased within its boundaries many times.

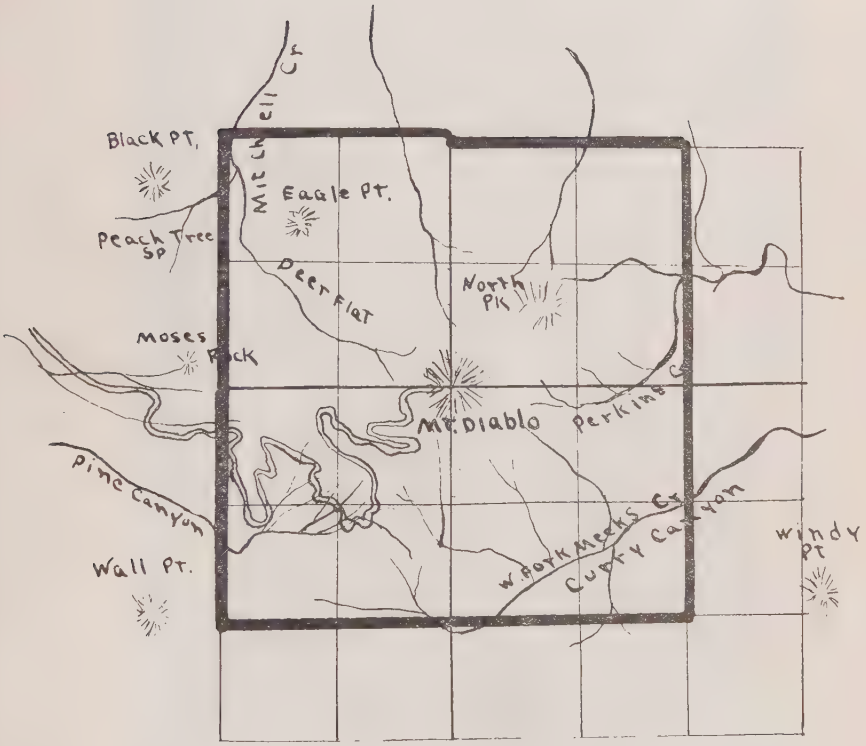


FIG. 24. The most recent refuge to be established is the Mount Diablo Park Refuge, set aside by the 1921 Legislature as Fish and Game District 3F. An attempt has been made during the past few years to improve game conditions on the mountain, and consequently there is already a supply of deer and a splendid supply of quail within the boundaries. Undoubtedly the deer will soon learn that they are safe within the area, with a resulting increase because of the safety afforded. In the end an overflow from this safe breeding place will furnish plenty of sport in the hunting territory. That sentiment strongly favored the creation of this refuge is evidenced by the small number of violations during the past year.

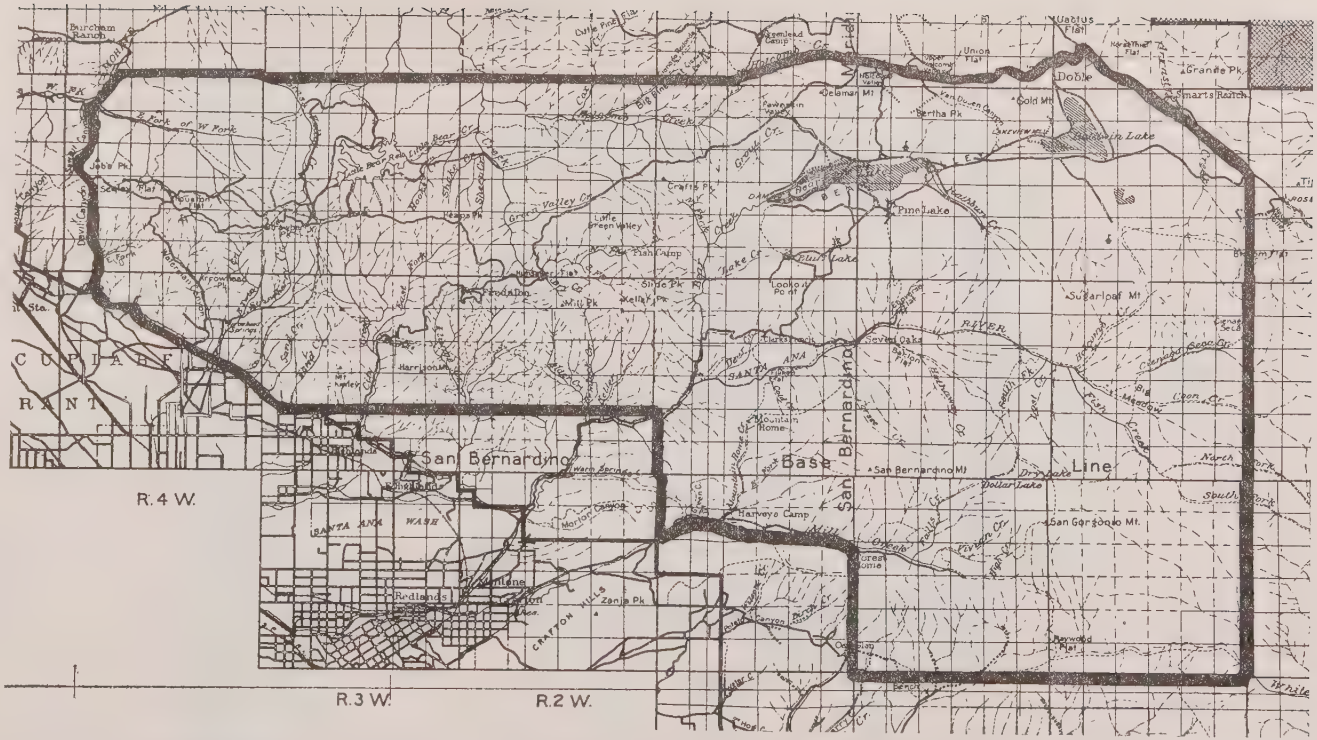


FIG. 25. Fish and Game Districts 4A and 4B, in the Angeles National Forest, taken together form the largest refuge in the state. The concentrated hunting in past years, due to accessibility from Los Angeles, reduced deer and other game to the danger point, and made these large refuges a necessity. Although there is some complaint that these areas are too large and usurp too much of the hunting grounds, yet most sportsmen agree that these areas are serving their purpose.

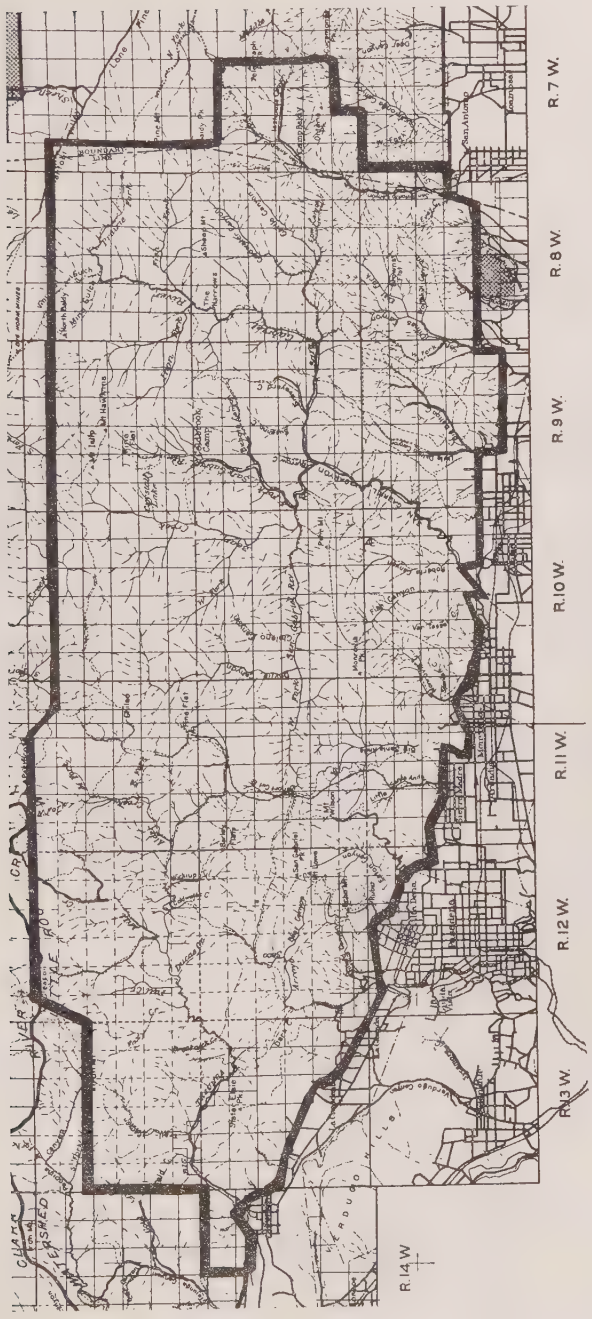
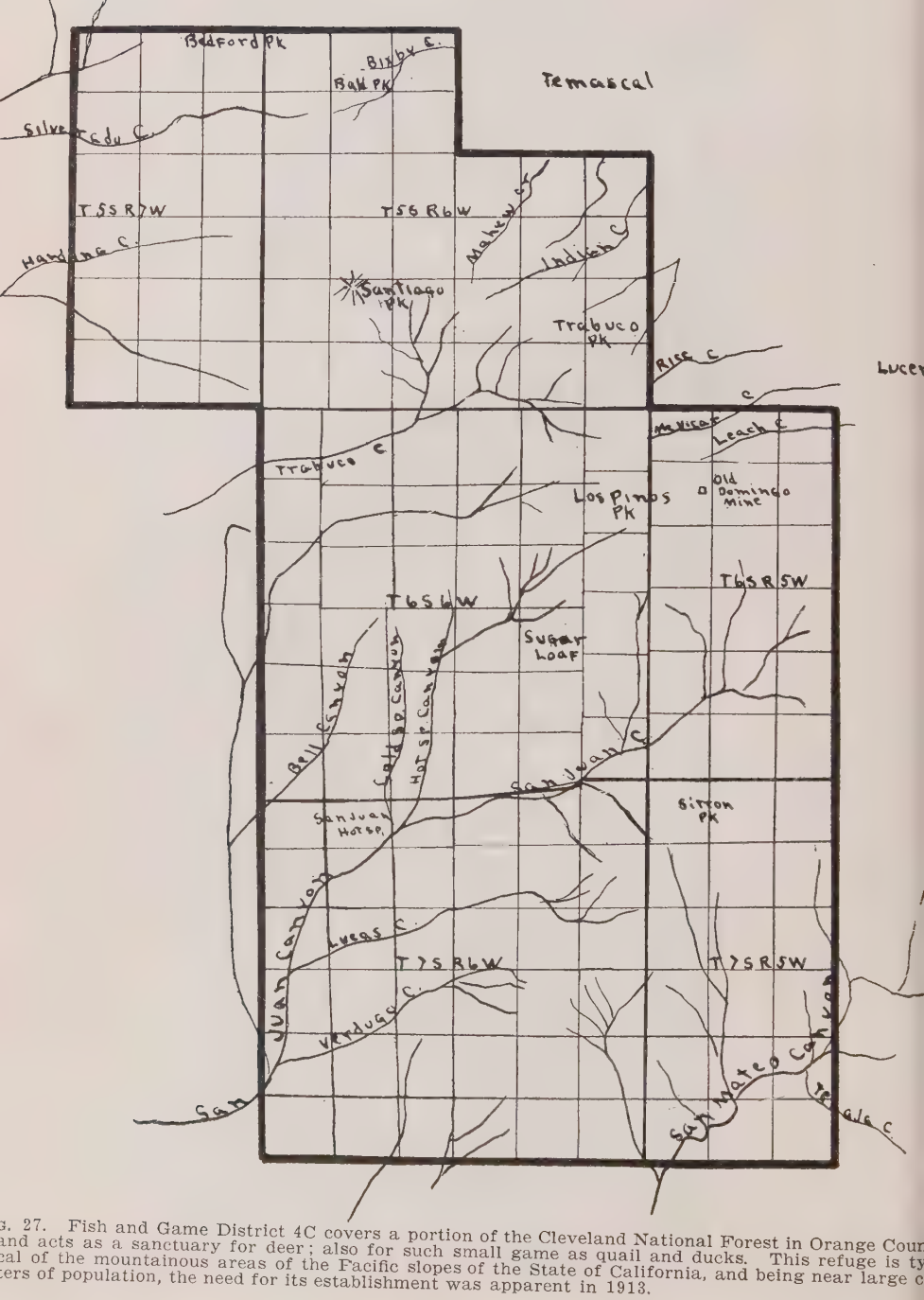


FIG. 26. Fish and Game District 4B. For description see Fig 25.



G. 27. Fish and Game District 4C covers a portion of the Cleveland National Forest in Orange Cour
and acts as a sanctuary for deer; also for such small game as quail and ducks. This refuge is ty
cal of the mountainous areas of the Pacific slopes of the State of California, and being near large c
ters of population, the need for its establishment was apparent in 1913.

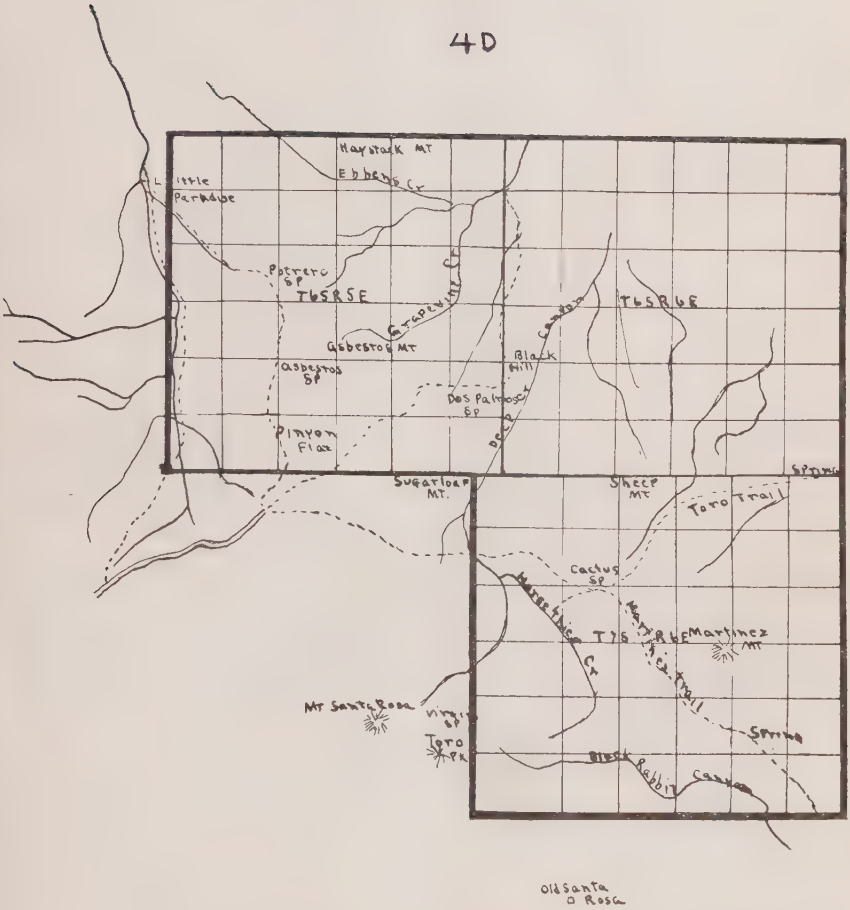


FIG. 28. Fish and Game District 4D, situated in the Santa Rosa Mountains of Riverside County, was created primarily to furnish increased protection to a band of mountain sheep that range over this territory. It is in reality the only refuge in the state which is distinctly for mountain sheep.

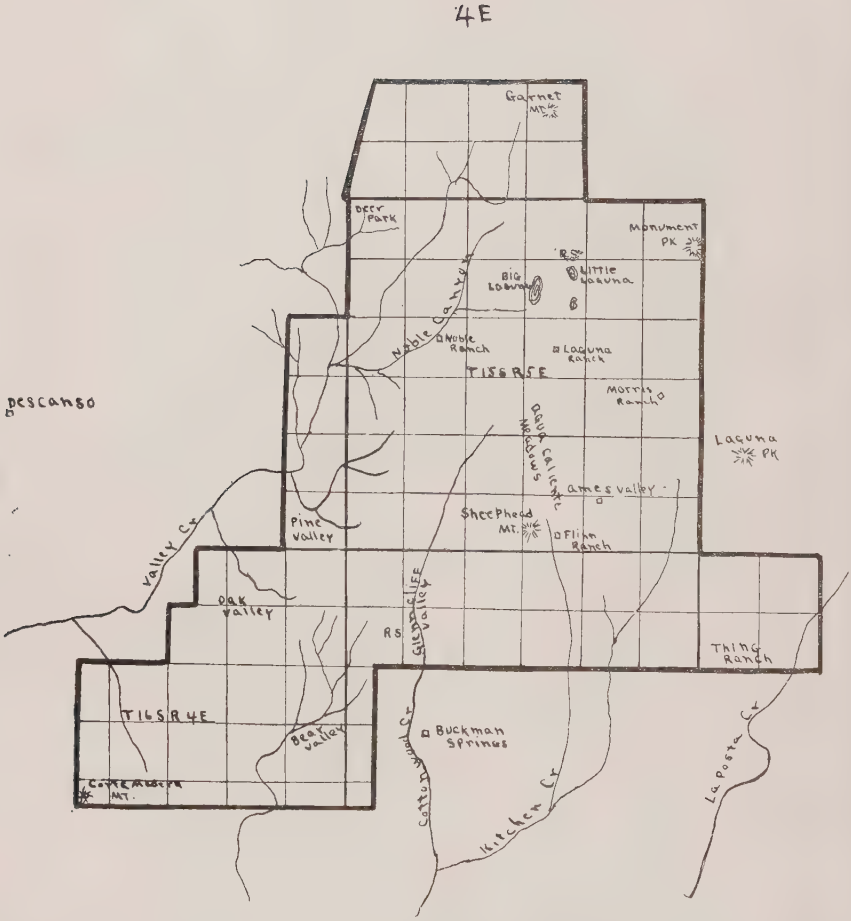


FIG. 29. Fish and Game District 4E comprises the slopes of Laguna and Corte Madera Mountains in San Diego County. The slopes are steep and covered with brush. A few small canyons containing running water make the area especially suited for deer and quail. Public sentiment has been strongly in favor of this most southern of the game refuges.

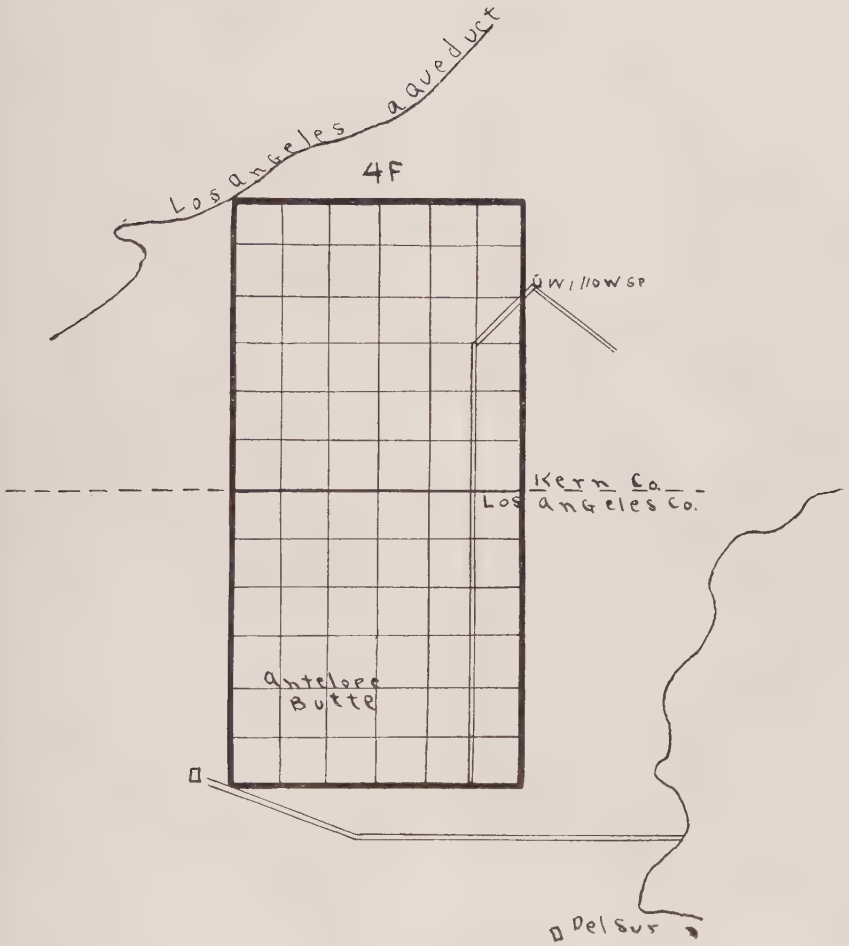


FIG. 30. Fish and Game District 4F, in northern Los Angeles and southern Kern counties, was set aside principally to better conserve the small remnant remaining of the once large herds of antelope which formerly ranged in this region. It can be considered primarily an antelope refuge.

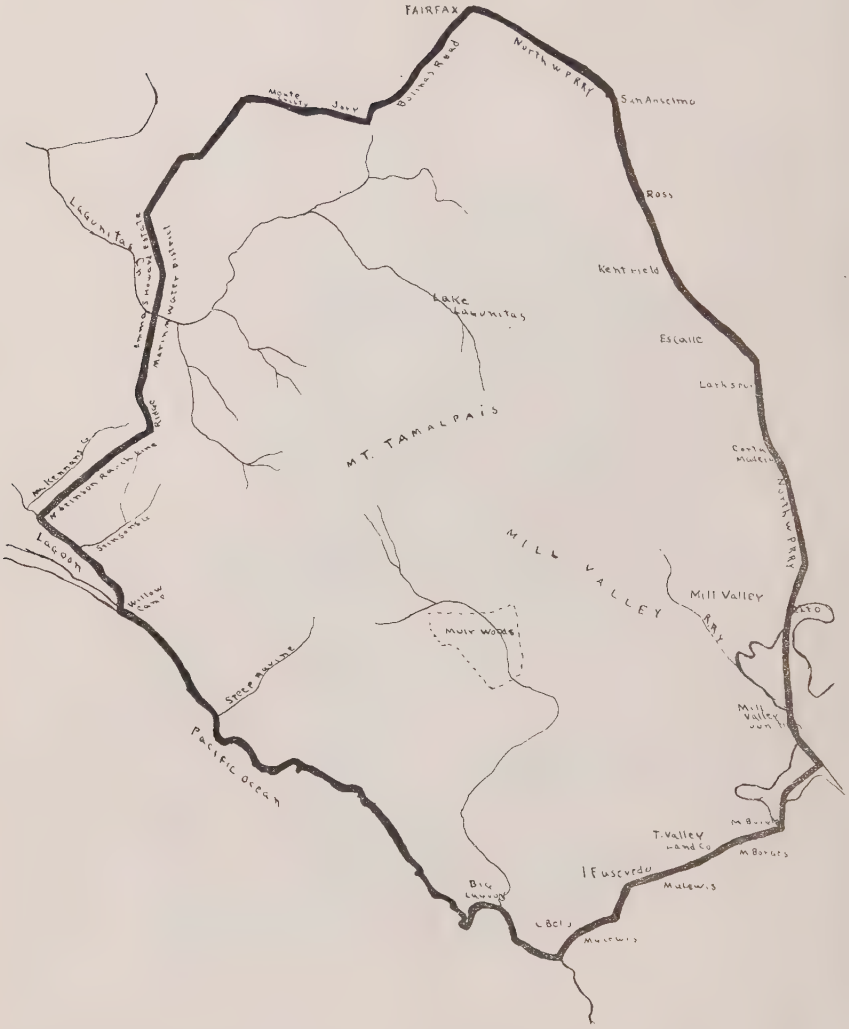


FIG. 31. Mount Tamalpais Refuge furnishes one of the greatest problems in the matter of administration. This refuge in Marin County lies close to a center of population and for years the area has been the recreation ground for thousands of San Franciscans. Before the refuge was established many were accustomed to carry firearms with them on their week-end trips, some for target practice and many for game shooting. As a consequence it has been difficult to apprehend everyone carrying firearms through the refuge. Two of the deputies from the Commission, during the year after the creation of this refuge, confiscated nearly a hundred firearms in a single day from vacationists within the refuge. If the thousands utilizing the Tamalpais Refuge as a recreation ground can be educated to the value of this refuge, it will become a very important one. Deer are numerous within its borders and there should be a sufficient overflow into the open hunting grounds to the north for many years to come.

A PIONEER ELK HUNT.*

Early the next morning we started again and at sunset, after a hard day's travel, by bye-paths, arrived at the rancho of Rafael Garcia. * * *

After enjoying Garcia's hospitality for the night, we found, on rising next morning, several of the neighboring rancheros, who had arrived on their way to the Punta de los Reyes, for the purpose of hunting the elk, with which it abounds. Sending all my men except two back to Sonoma, I resolved to remain and witness the sport, and getting fresh horses from Señor Garcia, we started for the point. I observed that the Spaniards had no arms, but they pointed to the riata, the unfailing companion of all rancheros, and exclaimed, "este es el rifle del ranchero!"—this is the ranchero's rifle. On our way, however, I observed one of the party dismount near a small grove, and selecting a straight, light pole, take from beneath his sarape a crescent-shaped weapon, which he fixed to the top of the pole. This instrument they call, from its shape, the "luna," and it is used for hamstringing the elk, which then falls an easy prey to the hunter.

The cool, bracing air of the morning promised us fine sport, as the horses, on whose exertions the sport mainly depends, would not be exhausted from the heat. But, as the Irishman devoutly remarked, "Providence never opens one door but it shuts another," a reflection verified in the present instance by the rising of a dense fog, which prevented us from seeing any considerable distance and forced us to be circumspect in picking our way over a very broken and hilly part of country. Crossing a deep valley, up which I could not see for the mist, we surmounted a high hill, and I saw in a moment that we stood on an isthmus or neck of land, connecting a lofty promontory—lying right before us—with the mainland. At the same time I discerned the sea on either hand, and heard the musical roar of the surf, as it tumbled ashore on the right. Suddenly one of my men exclaimed, in a low tone: "Hush!" and, rifle in hand, dismounted for a shot. Following the direction of his glance, toward the promontory, I perceived a band of elk which must have numbered not less than four hundred head of superb fat animals—the apparently cumbrous horns of the bucks thrown back on their shoulders, and the leaders seeming to hesitate whether it should be a fight or a foot race. Pacific councils, however, prevail, and the whole body were soon in full retreat, the old bucks occasionally stopping to gaze at us, while the does and fawns made the best of their way up the slope. Our horses scenting them at the same time—for the horses of California scent large game almost as acutely as dogs—became greatly excited, and could hardly be checked from dashing forward in pursuit.

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*This account of an elk hunt at Punta de los Reyes, Marin County, in August, 1846, was written by Joseph Warren Revere, an American naval officer and a direct lineal descendent of Paul Revere, of Revolutionary times. He took an active part in the conquest of California and raised the American flag at Sonoma, California, and was its first American alcalde. He was once the owner of San Geronimo Ranch in Marin County. The article appeared in "A Tour of Duty in California," published in New York in 1849. The interesting description of the hunt fortunately overshadows the harrowing details regarding wounded animals, and the killing of a fawn, which the author includes.—EDITOR.

The rancheros seemed to despise the stealthy advance on foot of the Americans with firearms, and as the game could not escape us, being surrounded on all sides by the sea, except on that occupied by our well mounted party of six men, they planned a mode of attack, which they communicated to us. Two of them gave their horses the rein with an "adelante!" and the noble beasts sprang forward in full pursuit of the now flying herd. At this season (August) elk are fatter than at any other, and can not compete with the horse in speed, whereas, a couple of months later the fleetest horse could hardly overtake them. Their speed was now inconsiderable, the rancheros soon coming up with them and scattering them in various directions. Our friend with the "luna" had hamstrung several of the poor creatures and his companion had entangled with his riata a noble buck, which was plunging and tearing violently, the riata being at its greatest tension and the little horse, to whose saddle it was made fast, standing stiff and stark with eyeballs staring, and every nerve braced to meet the pulls and tugs of the elk; while the Californian sat coolly in his saddle and, addressing the elk by the familiar title of "cuñado" (brother-in-law), pleasantly assured him that he "only wanted a little of his lard wherewithal to cook tortillas!"—a joke which the struggling victim was in no humor to relish.

From the contemplation of a scene so new to me, I was aroused by Don Egedio (Giles), who loudly called to me to shoot, and, turning my horse, I spurred him nearer the precipice, between which and myself the remainder of the band seemed disposed to rush, on their way back to the mainland. My horse was an admirably trained animal for the purposes of hunting after the fashion of California, but he would not stand still enough for a shot from the saddle; and to have dismounted would have been to lose him, as he would have pursued the elk. But a shot I was determined to have, on some terms, and so, when it seemed to my rather obfuscated vision that I was opposite the thickest of the band, I wheeled, seized my double-barreled gun, and pulled both triggers at a venture. My horse, unused to fire, jumped some twenty feet, more or less; I dropped my gun but kept the saddle. My shot accidentally took effect, for when I was able to rein up, I returned to the spot and saw a poor doe lying in a reclining position, the blood welling rapidly from the frightful wound inflicted by two heavy buckshot cartridges which had taken effect in the animal's shoulder. The unfortunate fixed upon me her large full eye, expressive at once of fright, sorrow, and reproach, and the mournfulness of the scene was heightened by the presence of a half-grown fawn, baaing and bleating around its dying mother. Sentiment, however, soon subsides on the hunting ground, and after my friend with the "luna" had coolly drawn his knife across the throat of the doe, I felt little compunction in bringing down the sorrowing fawn. In the meantime our friends on the point had not been idle, having taken toll of two more of the flock as they passed, one of which was caught with a riata by a Spaniard and an Indian vaquero, and the other shot by one of my men. It usually requires two men with riatas to kill the animal, the object being to trip him up and then give him the coup-de-grace; but

one man sometimes does it alone with a riata and luna, and there are rare instances when a single expert hand trips up the animal with his riata and then finishes him.

The herd had now retired to the mountains, and were dispersed among the crags and precipices, almost inaccessible to horses. Our party collected and rode down the point, where we found three hamstrung animals which had wriggled and screwed themselves into the most retired places. Our friend of the "luna," however, insisted with many round, full-mouthed oaths, that he had disabled nine and wounded some others in a desperate manner, with the points or horns of his iron. But these people can not be implicitly believed, and after traversing the point in every direction, we could find but one more elk, which had fallen over the precipice and lay half his length in the sea, the vultures and sea-birds already hovering over him in great numbers, impatiently awaiting the moment when death should make him their own.

CALIFORNIA FISH AND GAME

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All material for publication should be sent to **H. C. Bryant, Museum of Vertebrate Zoology, Berkeley, Cal.**

FEBRUARY 3, 1922.

"One thing now should be apparent to the dullest mind. It is that unless a great number of game sanctuaries are made and maintained inviolate for the safe breeding and increase of big game, the noble sport of big game hunting will be a thing of the past."

DO WE NEED MORE GAME REFUGES?

A survey of the game refuges in California will show that they are numerous, well distributed, and that many of them are of large size. Whether the policy of creating such refuges should be continued or ended, is a question which needs to be fully considered at the present time. On the one hand there is complaint by many hunters to the effect that all of the good hunting grounds are now within game refuges; on the other hand there is demand from conservationists for increased protection. Possibly the most dependable conclusion will be forthcoming after the test of time has been applied. Should the present refuges be able to maintain big game in sufficient numbers, the matter would be settled.

Some states have adopted the slogan: "A refuge for every county" or even "A refuge for every township," and it may be that the conservation of upland game birds demands the creation of a large number of small refuges. Our obligation to big game, however, seems to be satisfactorily met in the present series of twenty-eight refuges, most of them set aside especially for big game.

INTERNATIONAL BIRD PROTECTION.

The apparent benefits accruing from the joint protection given migratory birds in Canada and the United States has promoted discussion as to the possibility of arranging treaties with other countries of Central and South America, in order to secure such protection for migratory birds in those countries as is afforded them in North America under the existing treaty between the United States and Great Britain. In January, 1920, a resolution was presented to the President by the Committee on Foreign Relations, asking that a treaty be proposed between the United States and the Latin-American republics for the protection of birds which migrate between the United States and such countries.

The President, acting on the report of the Secretary of State, and also the report of the Secretary of Agriculture, stated that in view of existing conditions the time did not seem opportune to undertake the negotiation of a treaty for the protection of migratory birds with the Republic of Mexico, and that in the case of most of the republics of Central and South America treaties are unnecessary at present, although in the case of Brazil and Argentina such treaties might be of advantage.

In order to obtain more definite information before the negotiation of conventions with these countries was undertaken, Dr. E. W. Nelson, Chief of the United States Biological Survey, sent an agent to Argentina, Uruguay, Paraguay and southern Brazil for the purpose of securing needed information concerning the conditions relating to such of our migratory birds as winter in those regions. Further steps looking toward the execution of treaties with these countries will depend on the report of this agent.

IMPORTANT CONVICTION SECURED.

The Fish and Game Commission recently secured a conviction in an important case involving the violation of the law relating to the taking and shipping of trout. This case is of interest to all who favor the enforcement of the fish and game laws of the state, and especially to

those who are aware of the amount of time, money and labor spent in propagating trout and supplying the streams with this gamey fish.

For several months the Commission worked quietly but effectively on an investigation of the violation in question, and the result was the apprehending of two Alameda gentlemen who had for some time been sending packages of smoked trout through the mails from Tuolumne County, thus laying up a private supply of fish for their use during the winter. Simultaneously with the seizure of two boxes of fish as they reached their destination, the two men, with 50 trout in their possession, were arrested in Tuolumne County by a Forest Service deputy. This evidence, taken together with the trout in the two boxes, confirmed the suspicion that these parties were in the habit of taking trout beyond the legal limit.

The case was tried before Judge Wilkinsky of Sonora, and the court fined each offender $75 for exceeding the bag limit and $25 each for shipping the two boxes of smoked trout to Alameda by parcel post. Later a search was made of the residence, where about 200 smoked trout were found and confiscated.

It may be well to state that the law provides that a fine of $25 may be imposed for each lot of fish or game shipped by parcel post, and from $25 to $500 for any catch in excess of the limit, or imprisonment of not more than 150 days, or both. The Fish and Game Commission has the right to inspect the offices of express companies, although there is no provision in the law giving the right of access to post offices.

HUNTING ACCIDENTS—1921.

Since the publication of the note regarding hunting accidents in the last number of California Fish and Game, there has appeared what may be called almost an epidemic of hunting accidents. Judging by newspaper accounts, hunting accidents have been more numerous during the last year than for several years past, as a compilation of the accidents coming to our attention shows. Undoubtedly this compilation is incomplete, as newspaper items have formed the only source available, since hunting accidents are not distinguished from other accidents in the statistics of the State Board of Health. The list is published as a warning to those who go afield with a gun. If simple warning of danger is not effective in reducing the number of hunting accidents, it may be that the sight of a long list of persons actually killed and numerous others wounded, through their own or some one else's carelessness, may impress persons with the need for great precaution to avoid the taking of human life.

HUNTING ACCIDENTS, 1921.

Killed.

Name	Shot by	Date, 1921	Locality	How shot
James Anderson (14)	Self	October 15	Marshes, Seminary Ave., Oakland	In effort to repair gun, Anderson looked into muzzle of gun, which accidentally discharged, resulting in instant death.
David Hoover	B. J. Blaze	September 11	Bell Station, Santa Clara County	Mistaken for a deer.
Clifton Madison (13)	Self	September 24	Leona Heights, Oakland, Alameda County	Accidental discharge of gun while climbing out of abandoned mine shaft.
George W. Staton	Richard Williams	October 1	Suisun Marshes, Solano County	Duck hunting. Victim stood up in motor boat just as companion fired at flock of birds.
Jack Swartz	Red Hall	October 6	Bakersfield, Kern County	Mistaken for a deer.
L. R. Samson	Self	September 11	Ukiah, Mendocino County	Accidentally discharged gun on return from hunting trip.
Charles C. Berwick	Self	November 27		Accidental explosion of gun wounds arm and hand, death resulting from infection.
Gordon H. Sawyer, Jr.	W. L. Minaker	December 4	Woodland	Hunting in rice fields, gun accidentally discharged.
Alfred C. Musso (17)	Self	November 5	Bowman, Placer County	Grasped gun by the muzzle and beat the bushes with the butt to scare out the quail.
Anker Boegh (19)			Franklin, Sacramento County	Gun in front seat of automobile exploded, resulting in instant death.
George Granelli (11)	Self	December 22	Sherman Island, Sacramento Co.	Accidental discharge of rifle while hunting ducks.
John Pellester	Self	December —	Helena, Trinity County	Slipped in snow and accidentally discharged gun while hunting panther.

Wounded.

Dillion Allard	Self	August 21	Ukiah, Mendocino County	Accidental discharge of pistol; leg wounded.
George Shellford (14)		August 1	Pine Flat, Sonoma County	Accidental discharge of rifle.
Robert Clark, Jr. (16)	Companion	August 3	Ventura County	Shot in the hip by companion while hunting deer.
Norman Donohue (15)	Self	March 20	Ventura County	Arm shot off half way between elbow and wrist, as he was crawling through a fence in the river bottom.
James Nelson	Harry Moore	October 1	Newman, Stanislaus County	Companion stumbled and fell, gun discharged hitting Nelson in leg. "Dangerously hurt."
Robert Skinner	H. H. Spangle	September 9	Helena, Trinity County	Mistaken for a deer. Tore hole in arm and wound in side.
Prof. J. G. Brown,	Mr. Bassett	September 23	Near Redding, Shasta County	Mistaken for a deer.
Emmet Frye (14)	Father	September 8	Stonyford, Colusa County	Mistaken for a deer.
Frank Miller (16)	Self	March 28	Martinez, Contra Costa County	Accidentally discharged gun. "Will not likely recover."
J. T. Zirling (20)	Unknown		Near Auburn, Placer County	Stray shot passed through lung.
Homer Smith, (19)		November 24	Antioch, Contra Costa County	Accidentally shot in the leg while hunting. "Amputation found necessary."
K. I. Schofield	Self	September 3	Santa Barbara County	Shot in arm while attempting to pull gun through fence.
M. Fontaine		November 4	Calaveras Valley	Thrown from motorcycle when machine skidded and ran into brother's car. Victim's back broken.
Tony Marvinna	Frank Sepada	August 5	Upper Bayo, east of Mount Hamilton, Santa Clara County	Mistaken for a mountain lion.
Frederick K. Burkett (15)	Ed. Maurrer	September 13	East of Mount Hamilton, Santa Clara County	Mistaken for deer. Spinal column injured, resulting in complete paralysis of the lower limbs.

"PUBLIC SHOOTING GROUND-GAME REFUGE BILL."

Through the enthusiastic and timely efforts of sportsmen and the cooperation of Congressmen and Senators, there has been introduced and is now pending before Congress a bill known as the "Public Shooting Ground-Game Refuge Bill"—a bill on which the future of the sport of duck shooting depends. These men have realized that because of the disastrous results from inadequate game protection, it has become most essential that suitable territory shall be set aside for all time to come, to act as breeding, feeding and resting places where birds are free from molestation, if the birds and the sport of shooting them are to be perpetuated.

The main provisions of the bill include the establishment of shooting grounds for the public, the establishment of game refuges and breeding grounds for protecting migratory birds, and a federal license to hunt migratory birds.

The federal license of $1 is to be paid by the sportsman who hunts migratory birds, and not by the taxpayer, and is to be issued by any postmaster. It shall become void after the thirtieth day of June, next succeeding its issuance.

The federal license will in no way supercede the state license or relieve the gunner from his obligations to his state laws. The funds derived from the license sales are to be used for the purchase or rent of refuges and shooting grounds where territory is available and where the greatest good will result. The shooting grounds will, of course, be distributed as equally as possible over the different states, depending upon available areas that are suitable.

The bill further provides for the creation of a commission to be known as the "Migratory Bird Refuge Commission" to be composed of the Secretary of Agriculture, the Attorney General, the Postmaster General, two members of the Senate (to be selected by the President of the Senate) and two members of the House of Representatives (to be selected by the Speaker), to arrange for the purchase or rental of the refuges and hunting grounds; which commission is to make an annual report of its activities and expenditures to Congress.

Any employee of the Department of Agriculture, authorized by the Secretary of Agriculture to enforce the provisions of this act, is to have power to arrest without warrant any violators he may apprehend, and with warrant to search any place.

Any violation of the act, or any regulations made pursuant to the act, shall constitute a misdemeanor and shall be subject to imposition of a fine of not more than $500, or to imprisonment for not more than six months, or both.

NOTABLE ARRESTS AND CONVICTIONS.

Deputy Burke recently apprehended two men in San Mateo County, killing deer at night with a spotlight. A jury trial before Judge Johnson resulted in fines of $200 each for the men. Notice of appeal has been filed by the defendants.

Deputies in various parts of the state have recently made many arrests for the taking of game fish between an hour after sundown and an hour before sunrise. Fines have been imposed in every case.

In September an Italian in San Mateo County was arrested by Deputy Burke for having in his possession quail and non-game birds. Judge Griffin fined the man $200.

Deputies in the duck section of the Sacramento Valley have made numerous arrests for night shooting and over-the-limit of ducks. Fines ranging from $50 to $200 have been imposed.

Deputy Atkinson recently arrested a man for killing deer within Fish and Game District 4C, a game refuge in Orange County. Judge Cox of Santa Ana imposed a fine of $100.

Deputy Bundock recently apprehended a hunter with a doe in his possession. Judge J. S. Fitzgerald of Livermore imposed a fine of $150.

Deputy Tibbetts arrested two parties for having in possession eleven quail within Fish and Game District 1M, a game refuge. Judge F. Bunnell fined each $100.

On October 30, Deputy Armstrong and Deputy Steele arrested eleven men for shooting from power boats. Judge Prince of Benicia fined each $25.

A fisherman was apprehended by Deputy Sherwood with over-the-limit of salmon and was fined $100 by Judge W. S. Rice of Modesto.

Two duck hunters with over-the-limit of ducks were arrested by Deputies Britton and Carpenter on November 26. Judge Farnum of Willows, finding them to be old violators, fined each $100.

Fines of $25 each were meted out to five men found night shooting by Deputy Ludlum and Deputy Stanley.

On November 11, Deputies Willard, Britton and Carpenter arrested two market hunters found night shooting. Each was accorded a fine of $100 by Judge Farnum of Willows.

Forest Deputy N. Phillips arrested N. Alvarez for taking fish with an explosive in Madera County on August 28, 1921. Judge Bennet of Madera sentenced the violator to 100 days in jail.

"SAVE NOW OR LOSE FOREVER."

Such an excellent editorial on the subject of protection and conservation appeared recently in "*The Gull*" (Vol. 3, No. 11, pp. 3–4) the publication of the Audubon Association of the Pacific, that we wish to quote a few extracts therefrom. The editorial was incited by an article appearing in the bulletin of the Audubon Society of New Hampshire.

Attention is strongly drawn to the fact that "the trees of our forests need the birds even more than the birds need the trees." "This matter of interdependence of plant growths and birds upon each other is one which escapes the notice of most people and the most serious task confronting Audubon societies today is to bring this point home to every community and every family and to every individual." The average man is in great danger of losing sight of the damage which will be done by the insects which would have been disposed of if certain useful birds had been spared instead of being so thoughtlessly killed because of a slight personal loss in fruit or grain.

"Man can protect his orchards and city shade trees to some extent by the expensive process of spraying, but when it comes to all the trees in all the woods, he is powerless. We see his helplessness in the case of fungi diseases, such as the chestnut blight and the white pine blister rust."

Vast sums of money have been expended by the government in an effort to check these agents of destruction, and vast sums must still be expended and many years spent in a further effort to control the situation.

"So we can easily appreciate the impossibility of man's efforts being able to check insect depredations in our forests.

"The cycles of Nature are vast; the life of man, short. Everything he requires, save air and water, is limited and measured out to him, but he is only now beginning to concern himself with the diminutions which have resulted from his own recklessness and waste. In so far as living organisms are involved in these problems, future generations will be fortunate indeed if they progress rapidly enough in knowledge and intelligence to identify the interrelation of living things in time to preserve those forms which are essential to their own well-being. Up to the beginning of the present century, we have fatuously confined our researches to the discovery of substitutes for what we have wantonly destroyed or carelessly ignored. While our country was sparsely inhabited, and while enormous areas were left, wherein the unbalancing influence of man had not yet been felt, there was always the consolation of unmeasured abundance upon which to draw. This is true no longer. We of this generation have enjoyed many things which will be denied to the next one. Turning to the examples cited above, enormous areas of chestnut have disappeared. The white pine is attacked by a rust which we think we can control by destroying two other useful growths, albeit at inordinate cost of time and money. No offset has yet been found for the depredations of the borers which are slowly but certainly eradicating the tamaracs in the Sierra. The questions we must face are: What will come next? When shall we recognize its occurrence? How long will it take to discover the cure? Shall we be able to apply the remedy?"

FARMERS' LAMENTATIONS.

Certain native California birds eat growing crops and occasionally cause real damage. Too many farmers, however, attempt to exaggerate depredations. Many letters received regarding such depredations remind us of the annual laments of certain farmers who would make us think that their crops are entirely ruined. As an article we have just read put it, if the wind does not blow all the fruit off the trees, the frost has killed the buds; if the rain does not come at the wrong time and ruin fruit or hay, rodent pests have entirely destroyed certain crops. Several farmers have gone so far as to say that unless relief from the depredations of birds be furnished immediately, they are

ready to give up fruit raising, or whatever the crop might be. Those of us who watch not unconcernedly the crop reports, often wonder at the contrast between the farmers' statements of complete loss and the annual enumeration of wonderful crops reaped, and the statement of the carloads sent to market. Not many years ago the grain growers around Tulare Lake maintained that winter grain had been ruined by geese. An investigation showed that some damage was done, but when the crop reports appeared it was shown that a record yield had been obtained from the same ranches from which the complaints had been made.

Birds are but one factor to be considered in the growing of crops, and the wise farmer, instead of becoming discouraged, will simply be led to seek means of preventing damage. Had we more who would devote themselves to solving the problem, a solution would quickly be found, for it is a sad commentary if man's ingenuity can not outwit any bird that flies.

FOR THE VIOLATORS' CONSIDERATION.

Clarence Johnson of Belmont, who had pleaded guilty recently to a charge preferred by Warden Jack Burke that he had shot a doe accompanied by two little fawns, appeared for sentence.

Judge Johnson explained the law to him and outlined the seriousness of this offense and imposed a fine of $200 or sixty days in jail.

After his impressive remarks to the accused youth, Judge Johnson read the following appropriate and timely lines:

The Fawns.

Little children of nature, your mother is dead,
For the hunter has found her his aim;
And long will you lie on your moss-covered bed
And wait for her coming in vain.

The cougar will scream in the dead of the night,
When the wind is a wail in the pine,
Then trembling you'll call for your mother in fright,
You'll call, but no answer is thine.

Ah, long in the hush of your leaf-circled home
You will wait for your mother's return,
While hunger will feed on your delicate flanks,
And thirst will your tender lips burn.

When the moon is as pale as the face of the dead,
And the hoot of the owl is a moan,
The many green paths where so often she led
You will timidly follow alone.

Sweet children of nature, so helpless, so mild,
Little friends of the shadow and glen—
Oh, had I the power to give you what I took,
I'd return you your mother again.

—Guy Fitch in Outdoor Life.

CANADA ENFORCING MIGRATORY BIRDS CONVENTION ACT.

It will be of interest to those concerned in the protection of birds in the United States to learn that the federal legislation for bird protection in Canada is legally sound.

In this connection we call attention to the recent case of The King *versus* Russel C. Clark. The defendant had in his possession a boat, a gun and fourteen Canada geese, at the time he was apprehended by a migratory bird warden. The case was first tried before a local magistrate and dismissed. An appeal from the dismissal was then taken to the Supreme Court of Prince Edward Island.

The court, in its judgment, points out the fact that the Migratory Birds' Convention Act was passed to give effect to a Treaty for the Protection of Migratory Birds which traverse Canada and the United States, the title whereof is not considered vested in any particular part of either country. It was further stated by the court that "the Canada goose is indisputably a migratory bird traversing the continent of America from the frozen north to the Gulf of Mexico and that it is only at certain seasons to be found in any particular part thereof."

The magistrate's order for dismissal was set aside and the appeal allowed with costs. Under this decision Mr. Clark's gun was forfeited and a fine of $10 was imposed in addition to the costs of court.

This case has attracted wide attention among naturalists, sportsmen and all who are interested in the conservation of wild life on the continent, and it is a source of much satisfaction to note this favorable outcome of a test case which assures the legality of Canada's enforcement act.

ADDITIONAL PROTECTION FOR MULE DEER DEMANDED.

With the coming of the automobile and good roads, the large mule deer of northeastern California is being greatly reduced in numbers. During the past season it was estimated that 900 machines containing hunters visited Modoc and Siskiyou counties. The license plates showed that they came from Oregon and Washington as well as from California. Many of these hunters obtained the full limit—two bucks—which shows that a very heavy toll was taken. It is the opinion of many hunters of this region that the mule deer will not be able to withstand such concentrated hunting and a sentiment is growing which favors either the closing of the season on this species for at least three years, thus giving them time to recuperate, or the establishment of a limit of one buck.

DOES THE DOVE SEASON OPEN TOO EARLY?

If we recognize the fundamental conservation law which states that birds and mammals must be protected during the breeding season, there is no doubt but that the dove season for many years opened too early, and many hunters believe that it still opens too early, allowing the killing of birds which are still feeding their young. In this connection the following two letters are of interest:

"I wish a change could be made here in this district (District 4) on the opening of the dove season. It is too early by one month. Both last season and this I found nests with just hatched birds, August 18 to 20."—Chas. F. Schnack, Escondido, California.

"Yesterday, September 12, I visited a friend who lives near Camanche, or about eight miles from Ione. I went there to have a dove shoot, but in going through my friend's orchard I found nest after nest of young doves not yet good squabs. We counted probably thirty such young broods; then I stuck my gun in the case and quit. This is to suggest that the open season should be one month later."—Frank E. Covey, Stockton, California.

Not only does an early opening of the season endanger the mourning dove, but it often accounts for "soonering" on quail.

TRINITY COUNTY BACKS GAME LAWS.

As a result of the strict enforcement of the law in Trinity County during the earlier part of this season, there have been fewer violations of the game law this year than for several years past. The fine for hunting without a license has been raised to $25; one violator who merely attempted to kill a deer was confined in jail for ten days, while another who was unable to put up $500 bail was compelled to remain in jail for 17 days awaiting his trial. The success of this policy is evident from the small number of deer killed this year.—G. O. Laws, Douglas City, California.

A QUOTATION FROM EARLY CALIFORNIA HISTORY.

From "A Natural and Civil History of California," written by Miguel Venegas, in 1758, we quote an interesting discourse on the brown pelican. Venegas was one of our earliest California explorers. He gives many quaint descriptions containing ideas which are questionable when exposed to present day knowledge.

Venegas, quoting from Father Torquemada a list of birds found about the harbor of "Monte-Ray," continues as follows: "The same author says that in the island of Assumpcion they saw great numbers of a peculiar species of gulls, which, as they are found in several parts of California, it may not be improper to insert here the description of them by Friar Antonio della Assumpcion."

The gulls live on pilchard and other small fishes; but they are equal to a very large goose in size, their bill a foot in length, and their long legs resemble those of a stork; their beak and feet are like those of a goose. They have a vast craw, which in some hangs down like the leather bottles used in Peru for carrying water; and in it they put their captures to carry them to their young ones. The friendly disposition of these birds is something surprising, for they assist one another, as if they had an unadulterated use of reason. If any one is sick, weak, maimed, or otherwise disabled from going in quest of food, he is plentifully assisted by others, who lay it before him; of this I, myself, was an eye witness in the island of San Roque, where I accidentally found a gull tied with a string, and one of its wings broken; around this maimed bird lay heaps of excellent pilchards, brought thither by its companions; and this I found was a strategem practised by the Indians, to procure themselves a dish of fish; for they lie concealed, while gulls bring these charitable supplies; and when they think that little more is to be expected, they seize upon the contributions.

"Such are the mysterious ways of providence for the support of his creatures."

BLACKBIRDS DAMAGE GRAIN IN IMPERIAL VALLEY.

Mr. F. E. Garlough, an investigator for the United States Department of Agriculture, has recently reported that blackbirds have been very destructive to growing grain in the Calipatria district of the Imperial Valley. Ranchers interviewed reported considerable sums of money expended for ammunition and labor in an attempt to protect their crops. One rancher estimated his expense at four hundred dollars, another at one hundred and thirty-three dollars, and a third at one hundred and seventeen dollars. In addition to a large resident blackbird population, the number is greatly augmented by migrants from the Great Basin, which spend the winter in the valley. The problem is, therefore, likely to continue a serious one.

ALASKA SALMON FISHERY.

On October 26, 1921, a conference was called in Washington by Secretary of Commerce Hoover, to consider the condition of the Alaska salmon industry and the steps to be taken to perpetuate the salmon supply.

The consensus of opinion at the conference was that there has been overfishing of the salmon waters of Alaska; that under the existing law the further depletion of the salmon supply can not be prevented, and that the industry is faced with eventual extinction unless some radical action is taken. It was urged that Congress should at once give full and broad authority to the Secretary of Commerce to regulate fishing in all waters of Alaska over which the United States has jurisdiction, and it is noteworthy that the fishing interests assembled, representing practically 80 per cent of the volume of the salmon canning industry of Alaska, were, with a single exception, unanimous in advocating the bestowal on the Secretary of Commerce of full power and responsibility for upbuilding and preserving the salmon supply.

ALASKA SALMON INVESTIGATIONS.

Dr. Charles H. Gilbert and Field Assistant Henry O'Malley returned from an extensive trip to Alaska, which was devoted to a study of the runs of salmon in the southeastern and central districts. Special attention was given to the salmon of Kodiak Island, where a rack had been constructed in Karluk River early in the season and the counting of red salmon ascending the stream was being carried on. It is reported that up to September 17 the total escapement of red salmon up the river was 1,322,000. Dr. Gilbert advises that the investigations in the Karluk region were most interesting and profitable. Every spawning stream tributary to Karluk Lake was examined, and upward of 1,000,000 red salmon were observed on the very limited spawning grounds of that district. The escapement for spawning as related to the commercial catch, a subject which the bureau has under consideration at Karluk and Litnik in Alaska, as well as at Quinault Lake and Baker Lake in Washington, is receiving merited attention from the fishing interests. It is the purpose to continue the work in these fields and to extend the experiments to other favorable streams.—Fisheries Service Bull. No. 77, p. 3.

OIL POLLUTION.

The pollution of waters by oil from refineries and its consequent destruction of fish and bird life, has attracted attention the world over. At a recent conference in Washington, over pending legislation in Congress, the side of the oil interests was emphasized by oil men present. According to their statement, the bills now pending in Congress are discriminatory in that they single out oil interests for special legislation. In reality, oil is but one form of water pollution now affecting the fisheries. Fortunately a splendid attitude of cooperation on the part of the oil interests was manifested.

JUSTICE TO GAME WARDENS.

The work of the game warden, when well performed, should earn for him not merely the small recognition of moderate pay, but in addition to this the honor due to faithful service, the hearty cooperation of those who derive the greatest benefit from his strenuous, often hazardous toil. A complete list of the game wardens killed and wounded in the performance of their duties would bring to the public greater realization of the dangerous nature of the daily routine of a class of men too often reviled instead of rewarded—the yearly

honor roll of those who have made the supreme sacrifice passing into oblivion, while the negligence of the few appears to be blazoned forever by detractors desiring to discredit the game warden system. The great injustice of this is evident.

If every state in the Union could boast perfect laws for the proper protection of game and fish—the federal protective law equally perfect—these restrictions would be nothing more than the proverbial "dead letter" on the statute books without means of enforcement. Laws are inoperative if not enforced, and this applies particularly to those legislative enactments which are not fully in accord with the wishes of nearly all concerned. Game laws are still regarded in the light of so-called class legislation by so many men failing to grasp or admit the beneficent purpose that the need of good wardens, faithful and fearless enough to risk their lives in devotion to duty, must be admitted by all unprejudiced observers. As brave public servants they deserve and should receive support.

In few other, if any, branches of state employment does the expense of officials engaged in the work fall almost entirely upon the class supposed to benefit mainly through enforcement of a law. The gun license system has become so general throughout the entire nation that the proceeds in each state serve to pay the game wardens, and in some instances a portion of the revenue derived is even diverted to other interests, where the powers that be ignore the purpose of the fund—the evident if not always clearly specified principle governing its expenditure. To this extent the sportsmen of the land are doing their full share, but the moral obligation of active aid in the cause of conservation should never be ignored. Sportsmanship stands upon a broader basis than passive approval of good game laws and the work of good game wardens.

The direct, pecuniary benefit derived from strict enforcement of the game laws naturally falls to the farmer. The sportsman has his pleasure, for which he pays liberally in the expense incurred, while the tiller of the soil—the fields where Bob White has happy habitat—finds reward in relief from insect pests injurious to growing crops, with the clear whistle of the birds to lighten his own day labors. The clear-sighted granger should realize and appreciate alike the work of the wardens and the fees of the license-paying sportsmen, which combine to make the game laws effective, thus—with the farmer's hearty cooperation—forming a sort of invincible triumvirate guarding against annihilation of game birds in general and that universal favorite, the quail, in particular.—*American Field*, November 26, 1921, page 1.

GOVERNMENT HUNTERS KILL MANY PREDATORY ANIMALS.

Since 1915, when Uncle Sam turned hunter of wild animals that roam the western ranges and prey on the farmers' live stock, he has accumulated a game bag the like of which was never before witnessed in history, according to reports to the Biological Survey, United States Department of Agriculture, just made public.

By trap and gun the government hunters have killed a total of 156,150 predatory wild animals. That period represents the time of government activity in that kind of work.

During the fiscal year 1921 figures show the total number of predatory animals killed was 27,637, classified as follows: 89 bears, 2468 bobcats and lynxes, 24,258 coyotes, 128 mountain lions, and 594 wolves. The average destruction by these animals is estimated to be, for each wolf and mountain lion, about $1,000 worth of live stock; each coyote and bobcat, $50 worth; and each stock-killing bear, $500 worth.

SALE OF GOVERNMENT FURS.

A public auction sale of 10,087 dressed, dyed, and machined Alaska fur-seal skins and 1125 blue and 14 white fox skins from the Pribilof Islands was held at St. Louis, September 28, 1921, by the Fouke Fur Company, the department's selling agents. A considerable number of low grade skins included in the offering of fur-seal pelts brought the average price per skin down to $32.99, the total gross price bid being $333,924. Prices obtained were approximately 7½ per cent lower than the next preceding sale in May, 1921. The blue foxes sold averaged $96.83 per skin, an average advance of about 20 per cent over the prices received at the preceding sale in February, 1921. The total amount bid for fox skins was $109,398—Fisheries Service Bull. No. 7, p. 4.

GAME SHIPMENTS MUST BE LABELED.

The Bureau of Biological Survey, United States Department of Agriculture, calls attention to the fact that under federal law all packages in which wild ducks, geese, and other migratory game birds are transported, must have the name of the shipper and of the consignee and an accurate statement of the numbers and kinds of birds contained therein clearly and conspicuously marked on the outside thereof. Sportsmen shipping game birds without proper markings are liable to prosecution in the federal court and the birds to seizure and condemnation.

THE FRESH WATER MUSSEL A PARASITE ON FISH.

A recent publication of the United States Bureau of Fisheries (Document 893, pp. 1–181), details the life history and habits of the fresh water mussels of the Mississippi and Great Lakes drainages. That the work is timely is evident when it is known that the continual demand for these mussels for food and for the making of pearl buttons has brought about a need for careful conservation. A knowledge of the life history is the first need, when planning suitable protective legislation.

Outstanding in the life history of the fresh water mussels is the fact that in the larval stage they are parasitic on fish. The larval form, designated as glochidium, when completely developed and ready to emerge from the egg membrane, is a soft mass of flesh with neither gills nor foot, but with a thin shell composed of two parts like the bowls of tiny spoons, hinged together at the top. The number of glochidia born in the brood pouches of fully grown female mussels varies in the different species, from 75,000 to 3,000,000. If the glochidium matures its continued development is dependent upon its coming in contact with the gills or fins of a suitable fish host, and attaching to them. If it fails to make this attachment it dies within a few days' time. This is apparently true of all but two of the fresh water mussels. The larval mussel attaches itself by firmly clamping its valves to the tissues of the host. A certain portion of the tissue of the fish thus becomes inclosed and this quickly disintegrates and is consumed as food. The attachment causes tissues of the host to grow rapidly until the larval mussel is completely enclosed within a protective covering known as a cyst. After the period of incystment the mussel has attained a sufficient development to begin an independent life and to care for itself. Duration of the parasitic period may last from ten days to two or three months.

Twenty-six different species of fish are known to act as hosts to the developing mussels. Among them are such well known fish as the bullhead, yellow cat, small mouth and large mouth bass, yellow perch, crappie and striped bass.

The fact that fresh water mussels are dependent upon fish for existence during part of their lives emphasizes the fact that the conservation of the fishes is just as important to the preservation of the fresh water mussel resources as is the propagation and protection of the mussels themselves. "The disappearance or radical diminution in number of certain species of fish would result in the complete or virtual disappearance of corresponding species of mussels. On the other hand, as the growth of mussels in more or less dense beds produces conditions which are favorable to the growth of fish food—and observations do so indicate—then the disappearance of the fresh water mussels would result in the diminution of the food supply for fishes and the conservation of mussels is important for the preservation of our resources in fish."

LIMIT ON HUNTING LICENSES ADVOCATED TO CONSERVE BIG GAME.

During the hunting season last year more than 5,000,000 persons, estimates the Biological Survey of the United States Department of Agriculture, went out with guns into the woods and fields of America. Their going emphasizes the growing need of more adequate and uniform laws to conserve and protect the country's dwindling game supply.

"It has been the practice in many states," the department says, "to issue hunting licenses for the open season to all applicants, with too little regard for the available game supply of any particular area. The hunters may far outnumber the animals hunted within a given section, and under such conditions the extinction of big game especially is inevitable.

"The Department of Agriculture advocates a limited license plan for big game, based on annual estimates of game conditions in each district. This means that the number of big game licenses issued for a given area in one season would depend upon the number of game animals which it has been determined in advance can be spared. Proper administration of this sort should conserve game in the greatest numbers consistent with the reasonable demands for local grazing and other interests and obviate the necessity for establishing perennial closed seasons, except on areas being restocked."

DEER CONDITIONS IN THE TRINITY REFUGE.

For the past two years I have been filling the position of fire observer in the lookout on Bally Mountain, and being greatly interested in wild animals and their life history, I undertook a study of deer and their habits. Bally Mountain is situated practically in the center of Fish and Game District 1D. The Indian name for this mountain is "Lolcha Bola," meaning in English "Ghost Mountain." The Indians never hunted game on this mountain, as they were superstitious and believed in ghosts.

The south slope of the mountain is very steep and rough and is covered with various types of brush on which deer feed. The north and east slopes are covered with heavy timber and the does and smaller deer seem to stay on this side, going over to the south side mornings and evenings to feed.

I salted the deer both seasons near the station. The first two months of the season, July and August, does, bucks and fawns could be seen together at the salt logs in considerable numbers. In September and October I noticed a decrease in the number of bucks going to the salt logs, but the does and fawns continued going until I left, October 26.

I noticed a number of deer of different color. A cream colored and a red buck seemed to travel together. I saw them every few days in 1920 and 1921. I also observed a buck with a white head and neck, and one with a split ear hanging down on the side of his head. The does and smaller deer visited the salt logs more regularly than the bucks. A doe that had three fawns stayed near the lookout all during the summer of 1921. Many of the deer became very tame and hardly ever were frightened away. They were often near the Aladade map table and flag station, sometimes within fifty feet while I worked on the map. However, good pictures were hard to obtain on account of the dense brush.

My record of the deer seen in 1920 was 3276. In 1921, 3673 were observed, making an increase of 397 for 1921. Doubtless the same animals were counted many times.—Elsie R. Luckie, Hayfork, California.

IS THE DOVE BAG LIMIT TOO LARGE?

Are bag limits too large? They are. Fifteen doves are more than one man needs in one day. Most sportsmen would be, and all hunters should be satisfied with a bag limit of eight or ten dove, quail, or duck. If the bag limit on dove is not reduced and hunters persist in shooting them when they are coming to water or potting them while they are sitting on telephone wires and in trees, we will not have long to wait until the curtain is drawn on dove hunting.

Nature has been kind to the doves this year in southern California. Heretofore dove weed grew only in small patches along bean fields and dry washes. This year whole fields and even ranches are literally covered with the tidbit of the doves. This fact has helped to keep the birds more scattered and harder to hunt, yet there were over a thousand limits reported in Los Angeles the opening day of the season.

While hunting doves the second day of the season I saw three hunters shoot at a bird in succession, each missing it clean. The dove flew down the canyon and passed me at about forty yards distance. I fired once and missed. Instead of flying on out of range the dove banked sharply and landed right in front of me and began to eat. I noticed then that the dove was almost pure white. There were no spots on his back or neck. His wings and back were just a little darker than the breast. I walked closer to him hoping to get a better idea of his size and color but he flew away with that peculiar whistle of a mourning dove. I will add that the three hunters shot at him again as he darted over their heads; with the same good luck he flew on unscathed.—Edgar K. Lipking, Sawtelle, California.

FACTS OF CURRENT INTEREST.

The gray squirrel appears to be getting scarce in many sections, especially in southern California, and there is increasing demand for additional protection.

Computation of the salmon catch from January 1 to September 30, 1920, shows a total of 10,777,056 pounds. The catch for the same period in 1921 totaled 7,582,738 pounds, a decrease of 3,194,318 pounds.

That the mountain lion is still found in numbers in certain places in California is evidenced by the fact that J. G. Moore of Los Olivos, Santa Barbara County, recently applied for bounty on eleven lions taken between October 9 and November 26, 1921, in the Santa Barbara National Forest. The bounty will total $300.

A spoonbill duck apparently banded in Manitoba by the Mercantile Company was recently killed by a hunter on the Salton Sea in Imperial County, California.

Judging by reports from forest officers, the coyote continues to be a serious pest in many sections. This predatory animal attacks sheep and other domestic animals as well as deer.

The band-tailed pigeon appears to be on the increase, for there are many reports to the effect that the birds are breeding in considerable numbers in many sections of the state.

The open season on waterfowl has furnished good sport in many sections, but can not be considered extraordinary.

Game law violators have received heavy fines from the judges of the state, minimum fines being $25 and maximum $250. The attitude of the judges is doing much to prevent violations and make enforcement easy.

HATCHERY NOTES.

W. H. Shebley, Editor.

TROUT DISTRIBUTION, 1921.

The distribution season at the state hatcheries was closed on November 18, when the last fry from Mount Whitney Hatchery were delivered to the Bishop Chamber of Commerce for the streams of Inyo and Mono counties situated north of Bishop.

The total output of trout fry from the different hatcheries for the season of 1921 was approximately 24,500,000. At this date all reports are not in.

The output from the different hatcheries was as follows:

Mount Shasta	12,500,000
Fall Creek	650,000
Mount Whitney	2,300,000
Fort Seward	1,200,000
Lake Tahoe	1,000,000
Mount Tallac	900,000
Ukiah	550,000
Snow Mountain	160,000
Brookdale	900,000
Domingo Springs	550,000
Clear Creek	350,000
Feather River	800,000
North Creek	1,000,000
Bear Lake	1,200,000
Wawona	400,000
Kaweah	400,000

With the exception of two or three minor cases where a few thousand were affected, all of the fry were reared without any epidemics. Prompt action and efficacious treatments in these instances soon put them in good condition. Especial care was used in planting the fry to see that they were planted in suitable waters and given a wide distribution.

The demand for trout fry was greater this season than at any time in the history of the state, due to the increasing number of anglers and the easy access to the streams and lakes, that has been brought about by the construction of new highways and the increasing use of automobiles. Nearly every stream is fished to its limit. A shorter fishing season will have to be instituted in this state if the people are to continue to enjoy good fishing. The long open season does not give the fry planted a chance to grow before they are caught out.

In every section of the state there has been a demand for more trout fry by resort keepers, chambers of commerce, county boards of supervisors and others who are boosting their different localities. This demand on our hatcheries has been greater than finances and equipment can furnish. If the people insist on increasing the supply of trout fry to supply the great demand made on the waters of this state they must ask the next legislature to increase the angling license or provide other means of revenue to increase the output of the state hatcheries.

Improvements were made at Mount Shasta Hatchery, the Klamath River Egg Collecting stations, Bear Valley Hatchery and the Fort Seward Hatchery. An experimental hatchery was operated near Johnsville, Plumas County, to determine whether the water was suitable for hatchery purposes. The experiments were successful and whenever the funds are available a permanent hatchery will be erected on a site leased from the Plumas-Eureka Mining Company.

A new egg collecting station was built on the South Fork of Eel River, near Branscomb, Mendocino County, in an effort to collect more steelhead trout eggs and to determine whether chinook salmon eggs can be collected in sufficient numbers to furnish the Fort Seward Hatchery with eggs enough to supply fry to maintain the salmon run in the Eel River. Traps were placed in the South Fork of the Eel River, Dutch Charlie Creek and Kinney Creek. Cabins were built for the help at South Fork of Eel River stations and at Kinney Creek. Twenty-five hundred feet of ditch and flume were constructed to furnish the station with an adequate supply of water.

The upper reaches of the South Fork of Eel River near Branscomb is the region in which a great many of the best spawning areas of the river are found. The salmon spawn late in this section, during December, when weather conditions are favorable. This fall the unusually dry period in that section has not been favorable for the movements of the salmon up stream and it may not be possible to determine the number and length of time that the salmon run in the headwaters of the South Fork of Eel River. Plans are being made to collect the steelhead trout in these traps this coming spring.

SALMON DISTRIBUTION, 1921.

During the season of 1921 three millions of salmon fry were reared in the ponds at Mount Shasta Hatchery for distribution in the Sacramento River and two millions of salmon fry were reared in the ponds at Fall Creek Station for distribution in the Klamath River.

The work of collecting salmon eggs at Klamath Station on the Klamath River was finished on November 25. The season was favorable for the salmon to ascend the river and a total of 19,500,000 chinook salmon eggs were collected. This was the largest number of eggs collected during any season since the establishment of the station in 1910. There was still a number of salmon running at the time the station was closed that would have added several million more eggs to the season's take, but limited funds necessitated the stopping of operations in preparation for the collection of the rainbow trout eggs, as the spawning trout were ascending the river to enter the tributary streams.

During the fall and winter of 1920–1921 experiments were made in hatching salmon eggs in a small experimental station in Crane Valley, Madera County, to determine whether the site was suitable for the hatching and rearing of salmon eggs, should it be decided to operate an egg collecting station and hatchery below Power House No. 4 of the San Joaquin Light and Power Company's dam on the San Joaquin River. The San Joaquin Light and Power Company have erected a dam across the San Joaquin River near Aubery over which it is impracticable to construct a fishway. They also divert all the water from the river through a 17,000-foot tunnel, thus drying up during the summer and fall about fourteen miles of the bed of the San Joaquin River, between the dam and Power House No. 4. This prevents the salmon from passing up the river to their former breeding grounds and if the salmon in the San Joaquin River are not to be exterminated a rack and traps must be installed in the river near Friants, so that the eggs may be collected and hatched and the resulting fry released in the San Joaquin River below the dam. Our experiments proved that the location in Crane Valley was not a suitable place for a salmon hatchery.

It is proposed to rack the river near Friants and pump the water from the river for a hatchery supply next season. The expense of building the racks and traps, hatchery, living quarters for the help and equipping the same must be borne by the San Joaquin Light and Power Company, as the law provides that wherever a dam is built over which it is impracticable to construct a fishway for the free passageway of fish, the company or individual owning the same must erect and equip a suitable hatchery and egg collecting station free of charge to the state. An amendment to this law should be made at the next session of the legislature compelling the owners or occupants of such dams to not only construct and equip the hatcheries but to furnish the necessary funds to the Fish and Game Commission to operate the same, as they destroy the natural runs of fish and give the people nothing in return for the fishing interests that they destroy. The sum for operating such stations could be allocated among the different owners of the dams, if there were more than one owner or occupant of dams on any river or stream.

LIFE HISTORY NOTES.

THE OPOSSUM AT EL MONTE, LOS ANGELES COUNTY.

About a month ago, while engaged in flood control work on the Rio Hondo, north of El Monte, Los Angeles County, I noticed some boys carrying a box trap down the river. On stopping them I found they had trapped an opossum. They told me that they had seen another, evidently its mate, in the willows along the river. I could not find out how long the opossum had been in that locality or if more than two had been seen.

Judging from the reports on opossum in the last number of CALIFORNIA FISH AND GAME, the "midnight frolic" of the Old South will eventually come to southern California.—Edgar K. Lipking, Sawtelle, California.

UNIQUE EXPERIENCE WITH MOUNTAIN LION.

A rather unique experience with a mountain lion is told by L. S. Davey, of Usona, Mariposa County, California. Mr. Davey says:

"It was in the month of April, 1898. I had been plowing in my orchard, and had gone to the house for dinner. After dinner I took my rifle and walked about three hundred yards north of the house to a field of barley to kill some ground squirrels, when all at once I heard a small pig begin to squeal and saw the sows rallying together about three hundred yards farther on. As the pig continued to squeal for several seconds, I knew that something was killing it, so I ran across the creek to where the hogs were, and found the sows around the foot of an oak tree, very angry and worked up.

"When I first came up to the tree, the sows showed fight, but moved on up the hill as the pig had stopped squealing. I began looking for signs and found blood scattered on the oak leaves, and while making an examination I noticed blood dropping from the tree. Looking up I saw a mountain lion holding a pig in his mouth and still watching the sows. I raised my rifle and fired, the bullet striking him in the region of the heart. He jumped from the tree, ran about thirty yards, and fell dead."

A somewhat similar incident happened during the past summer when Louis Austin of Grizzly Flat killed a lion which had apparently been treed by sows after the lion had killed a small pig. Frank Barrett of Kingsley, California, vouches for the incident, having arrived on the scene shortly after the lion had been killed.—H. C. Bryant, Berkeley, California.

CAPTURE OF OCEAN SUNFISH OFF CATALINA ISLAND.

In the Zoological Society Bulletin, November, 1920, the capture off Santa Catalina Island, California, of an ocean sunfish (*Mola mola*), is recorded by Mr. Van Campen. An effort was made to harpoon the *Mola* and bring it to Avalon alive, but after a hard struggle it was necessary to shoot the fish before it could be towed in. After landing, a large crowd viewed the fish with much interest. The weight of the sunfish was estimated as about 2000 pounds, the actual measurements being ten feet and eleven inches from tip of snout to end of caudal and ten feet and ten inches in depth from tip of dorsal to tip of anal.

GRAY SQUIRREL DISEASE SPREADING.

The disease (scabies) attacking gray squirrels, described in the April number (p. 128) of CALIFORNIA FISH AND GAME, appears to be spreading throughout northern California, as is evidenced by the following reports of forest officers for 1920:

"Tree squirrels are getting so scarce in the Trinity section of the Shasta National Forest that only one or two are seen on a day's ride. A closed season of five years is recommended for this animal. Some of these animals are affected with some disease. Of four I saw last season, all had it. It seems to be a kind of scab and takes away all their strength, as they are unable to climb or make any time on the ground."—James H. Stone, Sisson, California.

"In the Squaw Creek district of the Shasta National Forest on lower Pit River, the gray squirrel was very abundant up to 1919, when for some reason he almost disappeared. This disappearance might be due to migration or some disease that broke out among them. The latter is thought to be the case."—J. R. Hall, Sisson, California.

"The gray squirrel is generally considered quite valuable as a game animal and is reported as quite numerous in some sections of the Klamath National Forest. It is reported that a disease breaks out every few years among the squirrels on the lower Klamath River, which reduces their number considerably. In instances observed, small red spots appear on the skin; the hair comes out in large patches giving the appearance of mange. Specimens observed have been very emaciated."—B. J. Shannon, Yreka, California.

CONSERVATION IN OTHER STATES.

NEW HUNTING ACCIDENT LAW IN PENNSYLVANIA.

The Pennsylvania legislature has recently passed a law making it a misdemeanor to shoot at, either injuring or killing persons in mistake for game, the penalty being from one to five years imprisonment, with a fine of from $100 to $500. The fine goes to the state unless the shot results in an injury, when the fine goes to the person injured; or, if death results the fine goes to the relatives of the deceased. Every state should have a law of this character which offers needed relief for the not uncommon occurrence of injuries or deaths resulting from the carelessness of sportsmen.—R. P. Holland, *Field and Stream*, 26, p. 501.

PUBLIC SHOOTING GROUNDS FOR OHIO.

Ohio is one of the first states to provide for public shooting grounds by legislation. The legislature of that state recently passed a public shooting ground and game refuge bill which gives the Ohio Bureau of Fish and Game almost unlimited authority in establishing public shooting grounds throughout the state. Ohio will stock her refuges and public shooting grounds with quail, wild turkey and Virginia deer.

OREGON NOTES.

Oregon has purchased the Simpson Game Farm and the Eugene Game Farm and these are now being operated with money furnished by hunting licenses.

The bob-white is on the increase in Oregon, according to the last biennial report of the Oregon Fish and Game Commission.

Oregon demands that the state laws should be made to conform with federal legislation regarding waterfowl. Oregon appears to be one of the last states to make this adjustment.

This state is trying out a scheme of holding steelhead trout in breeding farms at the hatcheries until they are one year old.

HUNGARIAN PARTRIDGE IN WASHINGTON.

A remarkable measure of success has been secured in planting the Hungarian partridge in Spokane County, Washington, and surrounding territory. About sixteen years ago an unsuccessful attempt was made to plant the Hungarian partridge in this district, but the effort made a few years later has proven such a success that sportsmen in Vancouver have also planted the birds with the same satisfactory results. It has even been suggested that the bag limit, which is now five birds per day per gun, may be safely increased within the next few years. The Hungarian seems to do better in this district than in its native habitat, and it is found that the species gives evidence of attaining a larger size than in Hungary. The Hungarian partridge is the native gray-legged partridge of all Europe and the British Isles, and it is significant that in Washington the birds appear to have thriven in the humid coast section as well as in the dry eastern part of the state.—R. P. Holland, *Field and Stream*, 26, p. 295.

NONDRAINAGE OF IOWA LAKES ADVOCATED.

As indicating deep public interest in the subject, it is interesting to notice that in the report of the Iowa State Highway Commission (1920), upon "Iowa Lakes and Lake Beds," retention and improvement of the lakes is recommended in nine-tenths of the cases, thereby adopting a policy of conservation in the interest of the rights of the entire public, as opposed to the policy of the drainage advocates. After a thorough investigation of the damage to crops which it had been claimed was a result of the wild birds which congregate in the vicinity of these lakes, the Commission reached the conclusion that in the relations of lakes, bird pests, and the public, it would be highly preferable that direct control measures be applied to the injurious species rather than that the lakes be drained, for the latter are not only of great value as recreation places but also are the center of abundance of numerous species of wild birds, including valuable game birds entirely dependent upon the presence of the lakes. W. L. McAtee (*Auk* 37, pp. 620–621) points out, however, that in insisting upon the raising of the water level, in order to discourage dense growths

of water lilies, of cattails, rushes, and of marsh as a whole, the report errs in that the marsh is absolutely necessary as a breeding home for practically all the birds which are attracted by the lakes. While saving lakes from drainage is a conservation measure, wild life will suffer practically as much from elimination of marshes as it would from drainage.

WISCONSIN TO RECORD ANNUAL DEER KILL.

An effort is being made this year in Wisconsin to obtain a comprehensive report of the killing of deer within that state. By this report, which will be made up from returns sent in by the hunters throughout the state, it is expected that statistics will be available as to the number of bucks killed, their weight, in what county the most were killed, what days and what time of day most were killed. Such statistics will not only be of great interest to the hunters of Wisconsin but will also be very important as a basis for future legislation.

BIRD PROTECTION IN FLORIDA.

The Florida legislature has again had the subject of conservation of the state's resources presented strongly to it by able advocates, and again has this honorable body turned a deaf ear to those who would have the state appoint game wardens to enforce the now unenforced laws for the protection of wild birds and animals. Florida now is practically the only state in which this unfortunate situation exists. However, it is expected that the matter will be taken up again with increased interest and vigor at the next session of the Florida legislature.—*Bird Lore*, 23 p. 229.

NEW YORK LEGISLATION.

From the one hundred and thirty-five salaried game wardens in the state of New York the force is now reduced to ninety, by the amendments to the game laws of that state which were passed by the last legislature. Since these men have been trained for years for their duties, the change must be regarded as decidedly detrimental to the interests of conservation in the state of New York.

Furthermore, Governor Miller has released George D. Pratt from the position of State Conservation Commissioner. This change is purely political and was not made because of any expressed dissatisfaction regarding Mr. Pratt's administration.

KILLING OF ANTELOPE AND MOOSE IN WYOMING PREVENTED.

At the last session of the Wyoming legislature a bill was passed granting authority to the Game Commission to issue permits, if they thought wise, for the killing of 100 buck antelope and 100 bull moose within the borders of the state. Both of these animals have for some time been absolutely protected. The antelope especially is becoming a very rare animal, in fact, entirely exterminated over large areas of its western range.

The home office of the National Association of Audubon Societies, upon being informed of the pending disaster, instituted a vigorous campaign of protest, as a result of which the permission to issue permits to shoot 100 antelope was withdrawn and the number of bull moose permits reduced to fifty.

FOREST SERVICE COOPERATION.

LARGE ANNUAL KILL OF DEER IN THE SANTA BARBARA NATIONAL FOREST.

Following is a list of the deer killed on or near the Santa Barbara National Forest during the season of 1920:

Santa Barbara County	119
San Luis Obispo County (Kern County included)	65
Ventura County (Los Angeles County included)	164
Monterey County	513
Total	861

There was a total of 978 reported last year, which would tend to indicate that hunting was not being carried on as formerly, or else that deer are becoming scarcer. However, from our observations the woods were full of hunters and it is known that more deer were killed than we were able to get a record of. This, along with information obtained from forest users, indicates that the deer are just about holding their own against the hunters and lions, with a probable increase in some localities.—Thomas W. Sloan, Santa Barbara, California.

COYOTE BOUNTIES IN TRINITY COUNTY.

The report of bounties paid out for the year 1920 by the county treasury shows that $1,323 was paid on coyotes. Of this amount $1,080 was paid for coyotes taken during the winter months when trappers were taking them for fur, and $243 was paid during the summer months, showing that one-fifth of the coyotes were killed during the summer for the reason that there was no fur value so far as dollars and cents go.—Alva Tracy, Knob, Trinity County, California.

DEER PROTECTION IN TRINITY NATIONAL FOREST.

A buck is lawful game at the age of two years. However, at that age he is usually still running with the doe and is not acquainted with the tricks and ways of dodging the hunter practiced by his older brother. A common saying among the stockmen is "Anybody can kill a forked-horn but it takes a hunter to get an old smarty." With so many hunters on the ground during the entire open season the "old smarty" is becoming very scarce and if this practice continues a few more years to the extent that it has in the past he will become extinct and the young bucks—the easy prey of the hunter—will be killed off as fast as they become lawful game. This would leave few, if any, besides the yearling or "spike-buck" to propagate the species. The value of a yearling buck can well be compared with a yearling in domestic stock. Under such conditions there would be a much lower percentage of fawns in a very short time, which would necessitate a close season for a period of years to allow the deer to stock up to standard. This would also show that in the past the game protection had been under poor management.

One suggestion I have to offer is a shorter open season, although a far better one is a game refuge covering North and South Yola Bola Mountains and the headwaters of the South Fork of Beegum Creek, South Fork of Cottonwood and Cold Fork creeks. This is a natural breeding and feeding ground.—Alva Tracy, Knob, Trinity County, California.

NEW GAME REFUGE PROPOSED FOR SANTA BARBARA NATIONAL FOREST.

A game refuge is recommended in the Santa Ynez district for a double purpose, namely:

First, to provide for an area into which a number of people go and in which hunting is forbidden, and also into which the game drift from the higher areas. It is felt that a game sanctuary is needed to better protect and perpetuate especially the deer that come down for water into the region covered by the proposed refuge.

Second, within the area covered by the boundaries of the proposed game refuge is what is known as Gibraltar Dam, in the Santa Ynez River, which impounds a large body of water with a surface of about 280 acres and from which the city of Santa Barbara derives its water supply, and it is very much desired by the city of Santa Barbara that everything possible be done to protect the domestic water supply from possible sources of contamination.—Thomas W. Sloan, Santa Barbara, California.

DEER PROTECTION VERSUS DOMESTIC STOCK ON THE CALIFORNIA NATIONAL FOREST.

While the number of deer now on the forest seem to be well provided with feed without materially reducing the capacity for sheep and cattle, it is obvious that with complete protection such as they must eventually get, deer could be increased to the entire capacity of the winter deer range which would include a large amount of summer cattle and sheep range.

Our estimated winter capacity is 635 cattle which would probably be equivalent to 6000 deer. Our estimated summer capacity is 7600 cattle and 50,000 sheep and in addition to this it is estimated that 40,000 deer are getting year-long feed on the forest. Much of the range now used for early grazing is suitable for winter deer range and if no paid permits were issued it is probable that the forest would provide year-long range for 175,000 deer, and in addition the capacity of the private land in cattle and sheep.

The maximum receipts which we can expect from grazing is less than $15,000. If cattle and sheep were excluded from the forest it would work a hardship on 175 permittees who would be forced to go elsewhere for summer feed. On the other hand a comparatively small area of the country at large comprising the area best suited to the purpose would be devoted to the perpetuation through use of a valuable, natural, public resource. No restrictions other than those imposed by the state game laws would be placed on the taking by the public of the mature bucks, of which from twenty-five to thirty thousand could be killed annually without danger to the breeding stock.

Roads and trails would be improved and the local communities would be benefited by the money spent by thousands of visitors for horse hire, guides and supplies. We have a record of 1000 deer killed during the past season (1920) and it is very probable that as many more were killed and not reported. These 2000 deer should average 75 pounds of dressed meat each which, compared to beef prices, should be worth 30 cents per pound, $22.50 per deer, 2000 deer $45,000. Add to this the healthful exercise, pleasure and self-satisfaction of over a thousand successful hunters, multiply all by ten and you gain an idea of the value and possibilities of the suggestion.—B. H. Mace, Willows, California.

ELK INCREASE IN KLAMATH NATIONAL FOREST.

There is a herd of five elk on Scott River in the Klamath National Forest and one has occasionally been seen on Salmon River watershed. These are unquestionably the original herd of three that were liberated in this vicinity about five years ago. They are apparently in good shape and doing well. This sufficiently demonstrates that this region is adapted to elk. The habits, range and food are practically the same as those of the black-tailed deer. —B. J. Shannon, Yreka, California.

SAGEY TASTE MAY BE REMOVED FROM SAGE HENS.

Sage hen, or sage grouse, as it is sometimes called, is the leading game bird of the Modoc National Forest. This grouse is very plentiful and a splendid game bird. The season should open fifteen to thirty days earlier and close that much sooner since it is impossible to distinguish between young and old birds on the wing and the old birds are often thrown away by the hunters. Sportsmen claim that the old birds are tough and sagey in taste, although personally I believe the sage taste permeates the meat after the bird is killed. I have found that if the craw is removed immediately after killing and the meat soaked for a few hours in cold salt water before being cooked that there is no appreciable difference between young and old birds. Supervisor Durbin also a few years ago ate sage hen almost daily for a couple of weeks handled in this manner and states that practically no sage taste was noticeable. Nevertheless this prejudice exists in the minds of at least ninety per cent of sage hen hunters, including many of our own forest officers.—Wm. S. Brown, Alturas, California.

BAND-TAILED PIGEONS ABUNDANT IN PLUMAS NATIONAL FOREST.

Wild pigeons are found on the southern half of the Plumas National Forest. They nest both on the ground and in trees or bushes and lay from one to two eggs. I found a nest during the middle of September with a pigeon in it about half grown. This nest was built in a bunch of alders about eight feet from the ground and consisted of a few small sticks. They feed on berries, pine nuts and acorns. They can usually be found near mineral springs, especially soda and sulphur springs. I noticed an unusually large number of wild pigeons during the past season; a flock near the soda springs at Keddie in December numbered nearly a thousand.—Henry A. Kloppenburg, Quincy, California.

REPORTS.

STATEMENT OF EXPENDITURES.

Period July 1, 1921, to September 30, 1921.

Administration:		
Commissioners	$187 46	
Executive offices	6,384 05	
Printing	141 25	
Research and publicity	1,333 43	
Accident and death claims	11 28	
		$8,057 47
Commercial fish culture and conservation:		
Superintendence	$4,550 50	
Inspection and patrol	7,982 71	
Research	7,891 00	
State laboratory construction	14,034 29	
Statistics	2,104 38	
Market fishing license commissions	110 00	
Propagation and distribution of salmon	10,411 12	
		$47,084 00
Sporting fish culture and conservation:		
Sup rintendence	$3,947 25	
Printing	235 90	
Prosecutions and allowances (fish cases)	1,840 95	
Angling license commissions	5,104 40	
Fish exhibits	4,418 25	
General patrol, pro rata share—		
San Francisco District (40 per cent)	10,764 26	
Los Angeles District (40 per cent)	3,952 74	
Sacram nto District (40 per cent)	8,104 41	
Propagation and distribution of trout	53,452 45	
		$91,820 61
Game conservation:		
Printing	$287 70	
Prosecutions and allowances (game cases)	380 72	
Hunting license commissions	7,006 70	
Mountain lion hunting (and bounties)	1,692 80	
General patrol, pro rata share—		
San Francisco District (60 per cent)	16,646 39	
Los Angeles District (60 per cent)	5,931 13	
Sacramento District (60 per cent)	12,116 31	
		$44,061 75
Tahoe camping ground		633 05
Grand total		$191,656 88

CALIFORNIA FRESH FISHERY PRODUCTS FOR MONTHS OF JULY, AUGUST AND SEPTEMBER, 1921.

Compiled by Fish and Game Commission, Department of Commercial Fisheries.

Species of fish	Del Norte, Humboldt	Mendocino, Sonoma, Lake	Marin	Solano, Yolo	Sacramento, San Joaquin	Contra Costa, Alameda	San Francisco, San Mateo	Santa Cruz	Monterey	San Luis Obispo, Santa Barbara, Ventura	Los Angeles	Orange	San Diego	Total	Mexican, brought into California
Albacore*											10,977,325	6,753	3,767,150	14,751,228	2,199
Anchovies							82,690		980,477		950			1,064,117	
Barracuda										88,758	684,126	2,006	105,084	879,974	83,969
Bluefish							86	1,981	17,665					19,732	
Boccaccio							13,104	14,601	95,265	282				123,252	
Bonito								280	16	6,051	62,147	395	13,351	82,240	2,800
Carp				103	792	10,212								11,107	
Catfish		2,283			291									2,574	
Chilipepper							1,370	6,834	650					8,854	
Cultus Cod	3,382	13,231	669				136,065	5,172	16,541					175,060	
Dolphin															
Eels															
Flounders				72		586	77,549	7,250	299	1,850	1,408			89,014	
Grayfish						683	25,930				2,602		26,360	55,575	
Greenfish															
Hake							29,495	1,425						30,920	
Halibut	17,450	46,535	2,041				50,331	341	5,075	39,378	96,134	13,177	282,578	553,040	560,588
Hardhead															
Herring															
Kingfish							5,466	5,912	1,085	1,400	7,202		345	21,410	50
Mackerel								298	191,309	40,518	428,097	8,032	60,279	728,533	1,194
Marlin															
Mullet													2,602	2,602	
Perch	867	279,071	615				8,530		3,928	20	17,908	450	2,810	35,128	
Pike					18	122								140	
Pompano							250	1		5	711			967	65
Rock Bass										285	101,156	14,905	19,314	135,660	700
Rockfish	6,003	6,895	20				341,482	52,316	173,019	10,952	102,812	13,451	81,410	788,360	3,775
Sablefish							117,926	180,971	330					299,227	
Salmon	785,174	1,090,491		485,398		731,035	693,897	6,112	5,835					4,077,013	
Sandabs							186,651	14,450	2,227		2,502			205,830	
Sardines							58,390	2,715,689	12,210,626	4,500	15,185	1,207	180,199	15,185,796	
Sculpin											4,153		183	4,336	
Sea Bass—Black										928	8,399		6,398	15,725	3,478
Sea Bass—White			8,785			280	16,182	13,419	554	38,317	552,045	3,365	99,959	732,906	192,423
Sea Trout							30			800	27	834	387	2,078	
Shad				46	29	17,159	31							17,265	
Shad—Buck				60		162								222	

Shad—Roe																
Sheepshead											90	212		112	414	
Skates							4,440	125	28			100			4,693	
Skipjack*								3,905				357,564	159	720,874	1,082,502	140
Smelt	19,726		927				12,600	50,571	51,966	23,891		23,079	19,813	4,174	206,747	1,184
Sole	10	53					1,312,440	115,945	6,885	1,370		1,036	59		1,437,798	
Splittail																
Striped Bass			180	719	942	42,399	38,883								83,123	
Stingaree																
Suckers																
Surf Fish																
Swordfish												13,288		450	13,738	
Tomcod							11,609	375							11,984	
Trout—Farm																
Trout—Steelhead																
Tuna											26	360,215	5,935	798,433	1,164,609	8,738
Tuna—Bluefin												1,829,328			1,829,328	
Tuna—Yellowfin												1,172,916			1,172,916	
Turbot																
Whitebait			116				1,343								1,459	
Whitefish											420	1,525		610	2,555	
Yellowtail											7,430	470,047	5,520	266,222	749,219	30,902
Miscellaneous	14					1,469	20,347	4,009	989 796	898		15,168	511		1,032,212	
Croakers												2,076	8		2,084	
Total fish	832,626	1,159,488	13,353	486,398	281,143	804,107	3,247,117	3,201,982	14,753,576	268,169	17,311,443	96,580	6,439,284	48,895,266	892,205	
Crustaceans:																
Crabs (doz.)	200						796								996	
Ecrevisse (doz.)																
Shrimps						73,194	219,405								292,599	
Spiny Lobsters																
Mollusks:																
Abalones	180								537,619	1,056					538,855	
Clams—Cockle	70	16	1,798												1,884	
Clams—Mixed	1,430		7,271			820									9,521	
Clams—Pismo										54,403					54,403	
Clams—Softshell	390	702	14,500			26,533	12,017								54,142	
Cuttlefish							1,825	812	3,512						6,149	
Limpets																
Mussels						73	26		2,875						2,974	
Oysters—Eastern (No.)			595,757												595,757	
Oysters—Native			220												220	
Snails																
Squid									32,643		1,205				33,848	
Miscellaneous:																
Frogs (doz.)																
Terrapins (doz.)																
Turtles																

All amounts shown in pounds unless otherwise specified. *Albacore and Skipjack cleaned. All other fish in round.

VIOLATIONS OF FISH AND GAME LAWS.

July 1 to September 30, 1921.

Offense	Number of arrests	Fines imposed
Game.		
Hunting without a license	26	$330 00
Hunting in refuges	5	80 00
Hunting on posted ground	1	25 00
Alien hunting with citizen's license	1	50 00
False statement to secure license	1	25 00
Deer—closed season—killing or possession	5	175 00
Does, spike bucks, fawns—hunting, killing or possession	35	1,775 00
Deer meat—closed season—possession	14	325 00
Bear meat—closed season—possession	2	25 00
Rabbits: cottontail, brush—closed season—killing or possession	21	470 00
Tree squirrel—closed season—possession	1	50 00
Quail and pigeons—closed season—possession	19	752 50
Doves—closed season—possession or killing—excess limit	20	550 00
Ducks—closed season—possession	6	100 00
Birds: non-game—closed season—possession	7	145 00
Birds: game—in captivity without permit	1	25 00
Chinese pheasant, sage-hen, rail—closed season—possession	3	50 00
Shooting game from automobile	6	50 00
Failure to keep head or horns in possession	14	850 00
Hides, illegal—possession	2	125 00
Total game violations	190	$5,977 50
Fish.		
Angling without a license	38	$560 00
Fishing for profit without a license	17	110 00
Abalone—possession—undersized	14	825 00
Bass: black, striped—spearing—excess limit—undersized	14	345 00
Barracuda—undersized—shipping	1	25 00
Clams—possession—undersized- over limit—closed season	33	1,100 00
Crabs—possession—undersized—shipping	3	25 00
Halibut—possession—undersized	1	25 00
Lobsters—possession—undersized—closed season	6	345 00
Salmon—possession—spearing—over limit	2	125 00
Sturgeon—possession	1	25 00
Using explosives for killing fish and obstruction of stream for taking fish	2	50 00
Total fish violations	132	$3,560 00
Grand total fish and game violations	322	$9,537 50

SEIZURES.

Fish and Game, and Illegally Used Fishing Apparatus.

Game.		Fish.	
Bear meat	10 pounds	Abalone	942
Deer meat	515 pounds	Black bass	34
Deer	6	Striped bass	190 pounds
Spike buck	1	Barracuda	130 pounds
Spike buck head	1	Clams (Pismo)	504
Ducks	128	Crabs	25 doz.
Doe	1	Crabs	47
Doves	23	Crappie	22
Deer skin	1	Eels	15
Meadow lark	1	Lobsters	32
Mocking birds	6	Lobsters	170 pounds
Non-game birds	3	Salmon	18
Pheasants	4	Salmon	100 pounds
Quail	27	Sturgeon	225 pounds
Rabbits	23	Trout	1
Sage-hen	1	Yellow fin croaker	3,200 pounds
Woodpecker	1	Illegal nets	7
		Searches	15

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